TECSULT

Projet de restauration des sédiments
de l'île aux Chats à Grande-Île par Honeywell

Îles-aux-Chats 6211-02-0A8

85 RUE STE CATHERINE OUEST MONTREAL (QUEBEC) CANADA H2X 3P4
FAX (514) 287-8643 TELEX 055-60122
TEL (514) 287 8500

Le 9 avril 2001

Secrétaire du BAPE
Édifice Lomer-Gouin
575, rue Saint-Amable
Bureau 2.10
Québec (Québec) G1R 6A6

À l'attention de : Anne-Lyne Boutin

OBJET : ***Complément de documents***
Projet de restauration des sédiments de
l'Île-aux-Chats – Grande-Île par Honeywell
N/Réf. : 5804

Madame,

Au nom de la compagnie HONEYWELL, nous vous transmettons ci-joint en douze (12) copies, le document intitulé «Clark Island Sediment Remediation – Dredging Alternative – Cost Evaluation». Ce document préparé par TECSULT inc. inclut une description des hypothèses utilisées dans le calcul des coûts de l'alternative de dragage des sédiments ainsi qu'un calcul détaillé des coûts de restauration tels qu'établis par notre service d'estimation en suivant les règles habituelles.

Veuillez agréer, Madame, l'expression de nos sentiments les meilleurs.

Romeo Ciubotariu, ing.
Directeur de projet

RC/hc.

p.j. : Estimation des coûts de dragage

CLARK ISLAND SEDIMENT REMEDIATION - DREDGING ALTERNATIVE COST EVALUATION

The purpose of this document is to provide the basis and details needed to prepare the cost estimate of the sediment dredging alternative and on-island disposal for the Clark Island sediment remediation project. AlledSignal has provided to the MEQ a summary of these costs in the document titled "Responses to Questions and Comments from the MEF", Volume 5 of the EIS, dated March 1999. The present document provides additional details regarding the sediment dredging volume involved, the duration of the dredging operations, the sediments removal from the sedimentation ponds to the confining cell as well as regarding the wastewater treatment. Each of the above elements are discussed below. In Volume 5 of the EIS, all sediments volumes were expressed as muds volumes (i.e. following dredging) for both dredging and water treatment operations (sedimentation and water treatment). AlliedSignal agrees that dredging operations should be presented in terms of in-situ volumes while sedimentation operations should be expressed in terms of muds volumes. However, while this simplification was used in the document, the costs presented reflect the effort required to carry out the specified operations.

To better understand the following elements, the sediments dredging process diagram is provided in Figure 1.

Sediment Dredging Volume

In Volume 5 of the EIS, the cost of sediment dredging has been presented as a function of the dredged muds volumes considering that the percentage of solids (by weight) is 25 %. The value of 25 % has been presented in Volume 5 of the EIS and was confirmed by the Amphibex manufacturer as indicated in Appendix A.

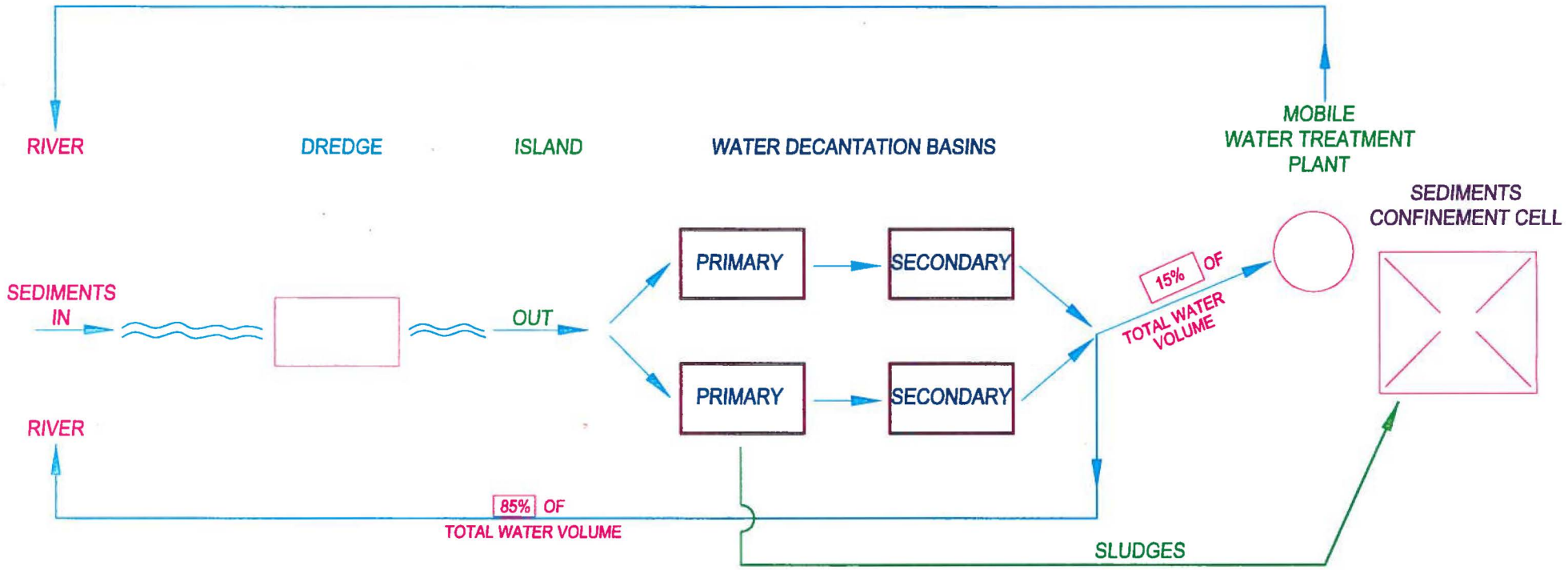
The calculations used to obtain the total volume of dredged muds are based on conventional soil phase relationships and are explained below :

. Measured pyrite cinders average natural humidity (W_w/W_t) :	46 %
. Measured pyrite cinders specific gravity (G_s) :	4.78
. Estimated pyrite cinders total in-situ volume (V_t) :	120 000 m^3

where

TECSULT

SEDIMENTS DREDGING PROCESS DIAGRAM - CLARK ISLAND SITE



IN-SITU SEDIMENTS

VOLUME: 120 000 m³

WATER CONTENT: 86%

DREDGED MATERIALS

MAX. % OF SOLIDS: 25%

RATE OF PRODUCTION: 20m³/hr
(IN SITU BASIS)

NUMBER OF DREDGES: 3

WATER TREATMENT

CAPACITY: 1500 m³/day OF SLUDGE (MAXIMUM)

CONFINEMENT CELL

CAPACITY: 120 000 m³

5804-01 (06.99)mab

W_w = Weight of water
W_s = Weight of solids
W_t = Total weight

Based on the above pyrite cinders characteristics, the in-situ pyrite cinders sediments contain :

. 113 685 tons of solids (W_s)
. 96 842 tons of water (W_w)
. 210 527 tons of solids and water (W_t)

Therefore, the saturated unit weight of the in-situ sediments is 1.75 t/m^3 (210 527 tons / 120 000 m^3). More details on these calculations are provided in Appendix B.

By considering that the result of dredging involves 25 % of solids (by weight) in the dredged muds, the following quantity of muds will be dredged :

. Water : 3 X Ws = 341 055 tons
. Solids : 1 X Ws = 113 685 tons
. Total muds weight = 454 740 tons

By transforming the above quantities into volumes, one obtains :

. Water (unit weight 1.0 t/m^3) :	341 055 m^3
. Solids (unit weight 4.78 t/m^3) :	23 783 m^3
. Total muds volume	364 838 m^3
. Applying contingency factor :	1.3
. Total muds volume (rounded) :	480 000 m^3

It should be noted that all remediation options contain contingency factors. In this case, the contingency factor of 1.3 takes into account certain variables such as initial water content, unit weight of pyrite cinders and the estimated total volume of pyrite cinders. All of these are based on a limited number of measurements and can, therefore, vary.

The total calculated volume of dredged muds of 480 000 m^3 is thus the result of soil phase relationship calculations based on the in-situ pyrite cinders average characteristics.

This volume is not simply the volume resulting from the multiplication of the 120 000 m^3 of the in-situ pyrite cinders by a multiplying factor of 4.

Duration of the Dredging Activity

The duration of the dredging activity is mainly controlled by the sedimentation basins capacity. As presented in the Volume 5 of the EIS, the sedimentation basins are designed to treat 1 500 m^3 of muds per day. Considering that Clark Island is the property of GCCL and that the space available to install the sedimentation basins is limited, the capacity of 1 500 m^3/day is the maximum value which can be reached. Figure 2 shows at scale the areas available for the project including the areas occupied by the sedimentation basins and the other areas needed by the contractor to carry out the work.

Based on the available information obtained on projects carried with the Amphibex dredge as summarized in the table presented in Appendix C, and based on the confirmation by the manufacturer (see Appendix A), the assumed dredge capacity is 20 m^3/hr of in-situ sediments. This capacity corresponds to a dredged mud capacity of about 80 m^3/hr or 640 m^3/day for 8 hours of effective dredging per day.

In order to provide the dredged muds needed to fill the sedimentation basin of 1 500 m^3, more than 2 dredges are required (1 500 m^3 / 640 m^3). By also considering that periodic repairs are required on the dredges, it is realistic to consider that 3 dredges are necessary for the duration of the project.

Considering the above, 320 days (480 000 m^3 / 1 500 m^3/day) are required to realize the dredging of the pyrite cinders sediments, which correspond to a period of 16 months or two working seasons. Three (3) additional months for the final corrections of dredging have also been considered in the cost evaluation.

The detailed cost estimate of the pyrite cinders sediments dredging and on-island disposal alternative are provided in Appendix D.

Fleuve St-Laurent / St-Laurent River

CHEMINS DE CHANTIER / SITE ROADS

USINE DE FCGL / OCCL PLANT

CELLULES DE CONFINEMENT EXISTANTES / EXISTING CONFINEMENT CELLS

ÎLE-AUX-CHATS / CLARK ISLAND

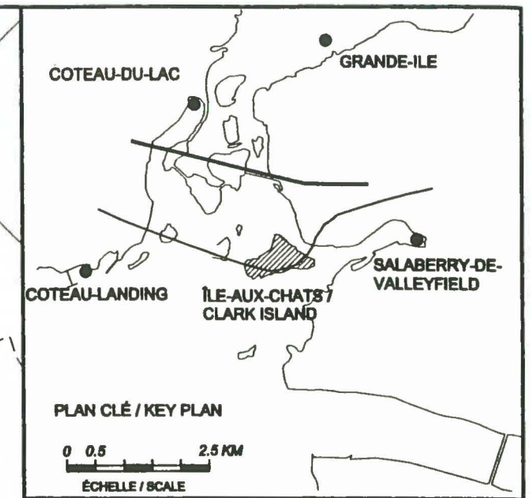
Baie Nord-Est / North-East Bay

CHEMIN D'ACCÈS / ACCESS ROAD

5 013 000 N
5 013 200 N
5 013 400 N
5 013 600 N
5 012 800 N
252 000 E
252 200 E
252 400 E
252 600 E
252 800 E
253 000 E

ÉCHELLE GRAPHIQUE / GRAPHIC SCALE

0 25 100m



LÉGENDE/LEGEND

- BATHYMÉTRIE DU FLEUVE / RIVER BATHYMETRY
- ZONE DE DRAGAGE DES CENDRES DE PYRITE / PYRITE CINDERS DREDGING AREA
- LIMITE DU DÉPÔT DE CENDRES DE PYRITE / LIMIT OF THE PYRITE CINDERS DEPOSIT
- BASSINS DE SÉDIMENTATION POUR LE TRAITEMENT DES EAUX / SEDIMENTATION BASINS FOR THE WASTEWATER TREATMENT
- ZONE RÉSERVÉE À L'ENTREPRENEUR / CONTRACTOR'S SITE INSTALLATION
- ZONE DE STOCKAGE DES MATÉRIAUX DE CONSTRUCTION / CONSTRUCTION MATERIAL STOCKPILES
- ZONE DE MAINTENANCE ET D'ENTREPOSAGE DES ÉQUIPEMENTS LOURDS / HEAVY EQUIPMENT MAINTENANCE AND STORAGE AREA

AlliedSignal ENGINEERED MATERIALS

SITE DE L'ÎLE-AUX-CHATS / CLARK ISLAND SITE
ÉTUDE D'IMPACT ENVIRONNEMENTAL / ENVIRONMENTAL IMPACT STUDY

DRAGAGE DES SÉDIMENTS ET DISPOSITION SUR L'ÎLE / *SEDIMENTS DREDGING AND ON-ISLAND DISPOSAL*

ORGANISATION DE CHANTIER / *WORKING SITE ORGANIZATION*

DATE: SEPT. 99 PROJET/PROJECT: 5804

TECSULT FIGURE 2

Dreddging evaluation/ 5804-F2 (99-09)a

Sediments Removal from the Sedimentation Basins to the Confining Cell

The lines 309 and 210 of Table 10 presented in Volume 5 of the EIS do not overlap but are rather complementary. Line 309 concerns the removal of the pyrite cinders sediments from the sedimentation basins of the wastewater treatment system and mainly involves the operation of a drag-line and the associated costs. Line 210 mainly concerns the transport by trucks of these sediments into the confining cell.

The details of these items are provided in Appendix D.

Water Treatment Unit

Costs for supplying and operating a water treatment unit have been considered in the cost estimate of the pyrite cinders dredging and on-island disposal alternative. Although a treatability test was carried out in laboratory, it is not possible to confirm with certainty that only a settling period of 24 hours would be sufficient to respect the MEQ guidelines. The water treatment unit is considered necessary if, in some instance, the discharge criteria are not met. It should also be noted that the leachate pumped out of the confining cell during its filling will also be treated in the mobile water treatment unit.

A total volume of 72 000 m^3, which represents a nominal 15 % of the total dredged muds, has been considered as the volume to be treated by the mobile water treatment unit. The unit costs for the installation and the operation of the mobile water treatment unit are respectively 0.016 $/l and 0.035 $/l. These unit costs are representative of usual water treatment units operation costs.

If MEQ could allow direct discharge of water from the secondary sedimentation basins to the river, the costs allocated for the water treatment unit could then be eliminated from the total cost of this solution.

Conclusion

The cost estimates submitted in the Volume 5 of the EIS are based on current engineering soil phase relationships, the efficiency of the Amphibex dredge as confirmed by its manufacturer, site constraints with respect to the place available for the

sedimentation basins, and water treatment costs to allow a nominal quantity of the discharges meet MEQ water discharge guidelines.

The cost estimate for the complete sediment remediation by dredging and on-island confinement provided compares favorably with other sediment remediation projects which involve dredging and confinement as provided in Appendix E.

Appendix A

Letter from the Manufacturer – Normrock Industries

TECSULT

Tecsult Environment Inc
consultants

85 ST. CATHERINE STREET WEST, MONTREAL, QUEBEC CANADA H2X 3P4
FAX (514) 287-8643 TELEX 055-60122
TEL (514) 287-8500

TRANSLATION

August 4, 1999

Mr. Norman Grant
President
NORMROCK INDUSTRIES
3360, boul. des Entreprises
Terrebonne (Québec) J6X 4J8

SUBJECT: ***Sediment Dredging - Clark Island Site***
O/Ref.: 5804

Dear Sir:

We have received your cost estimate regarding the dredging of the pyrite cinders located in Zone A along Clark Island. In order to be sure that the assumptions made by us to establish these costs are the same as yours, we would like that you validate the following items:

· *Percentage of solids in dredged muds:*	*25 %*
· *Production capacity of one dredge[1]:*	*20 m^3/h (in situ sediments)*
· *Number required dredges:*	*3*
· *Period necessary for dredging:*	*2 years*
· *Unit cost for the operation of a dredge:*	*300 $/h*

If the above assumptions do not correspond to yours, please indicate it on the present document and return it, duly signed, to our attention.

Thank you for your collaboration.

Very truly yours,

Marie-Claude Wilson, P.Eng.
Project Engineer
TECSULT ENVIRONMENT

Norman Grant
President
NORMROCK INDUSTRIES

MCW/hc.

[1] *It should be noted that the specific weight of the pyrite cinders is 4780 kg/m^3.*

ISO 9001

TECSULT

Tecsult Environnement Inc
Groupe-Conseils

85, RUE ST-CATHERINE OUEST, MONTRÉAL (QUÉBEC) CANADA H2X 3P4
FAX: (514) 287-8643 TELEX: 055-60122
TÉL: (514) 287-6500

Montréal, le 4 août 1999

Monsieur Norman Grant
Président
Normrock Industries
3360, boul. des Entreprises
Terrebonne (Québec)
J6X 4J8

OBJET: Dragage des sédiments – Site de l'Île-aux-Chats
N/Réf.: 5804

Monsieur,

Nous avons bien reçu votre estimation des coûts de dragage concernant les cendres de pyrite situées dans le secteur A en bordure de l'Île-aux-Chats. Afin de s'assurer que les hypothèses utilisées dans l'établissement de ces coûts soient les mêmes que les nôtres, nous aimerions que vous validiez les éléments suivants:

- *pourcentage de solides dans les boues : 25%*
- *capacité de production d'une drague[1] : 20 m^3/h (sédiments in situ)*
- *nombre de dragues requises : 3*
- *période de réalisation du dragage : 2 ans*
- *coût unitaire pour l'opération d'une drague : 300$/h*

Si certaines hypothèses ne concordent pas aux vôtres, veuillez, s'il-vous-plaît, l'indiquer sur ce document et nous le retourner dûment signé.

Nous vous remercions de votre collaboration. Veuillez agréer, Monsieur, l'expression de nos sentiments les meilleurs.

TECSULT ENVIRONNEMENT
Marie-Claude Wilson, ing.
Chargée de projet
Groupe Environnement

NORMROCK INDUSTRIES
Norman Grant
Président

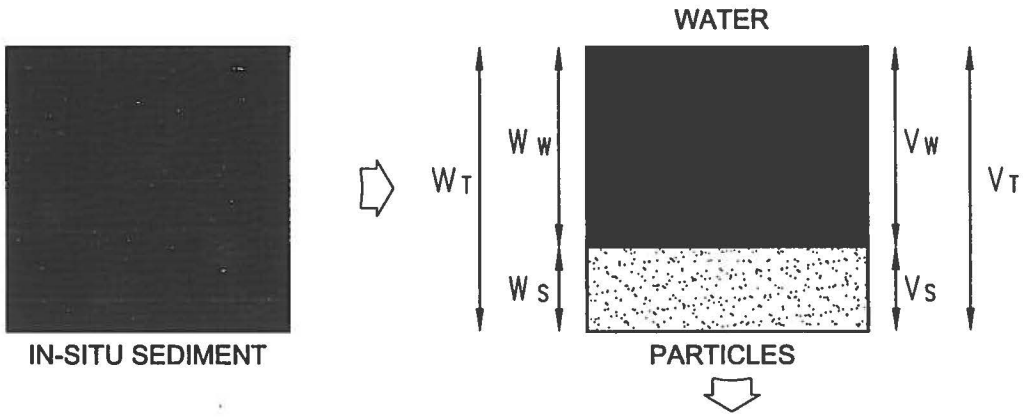
[1] Il est à noter que le poids spécifique des cendres de pyrites est de 4780 kg/m^3

ISO 9001

Appendix B

Calculations of Muds Volumes and Weights

Sediment Dredging - Dredged Volume
In-situ Sediments - Basic Data

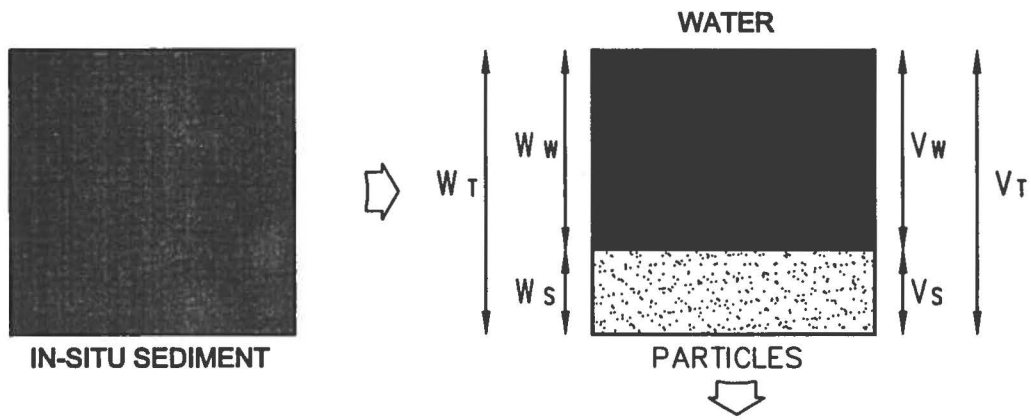


. Natural humidity = $46\% \left(\frac{W_w}{W_t} \right)$

. Specific gravity of solids = 4780 kg/m^3

. Total volume of in-situ sediments (V_T) = 120 000 m^3

Sediment Dredging - Dredged Volume
In-situ Sediments Weight and Volume



For 1000 kg (in-situ) → $W_S = 540$ kg (54%) $\quad V_S = \dfrac{540 \text{ kg}}{4780 \text{ kg/m}^3} = 0.11 \text{ m}^3$

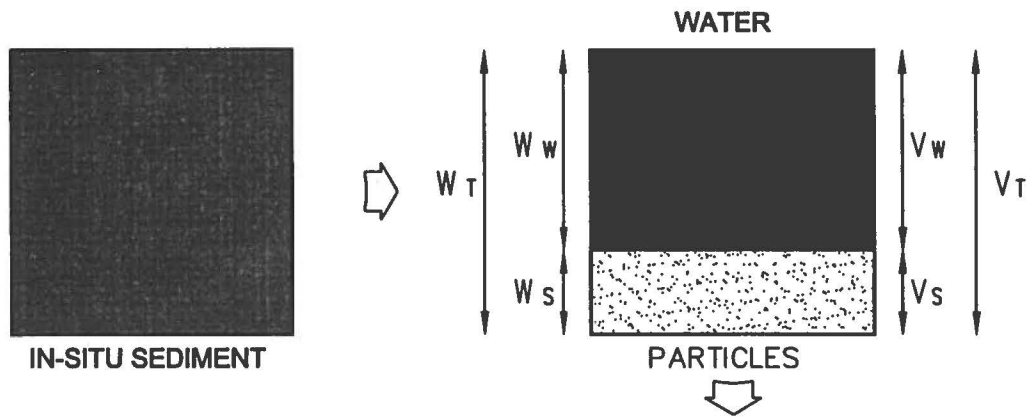
$W_W = 460$ kg (46%) $\quad V_W = \dfrac{460 \text{ kg}}{1000 \text{ kg/m}^3} = 0.46 \text{ m}^3$

$W_T = 1000$ kg (100%) $\quad V_T = \quad = 0.57 \text{ m}^3$

For 120 000 m^3 (in-situ) → $W_T = 210\ 526$ tons → $W_S = 113\ 685$ tons

→ $W_W = 96\ 842$ tons

Sediment Dredging - Dredged Volume
Dredged Materials - 25% of Solids



<u>Weight</u>

Water	$3 \times W_S = 341\ 055$ tons
Solids	$1 \times W_S = 113\ 685$ tons
Total	454 740 tons

<u>Volume</u>

Water	341 055 m^3
Solids	$\frac{113\ 685 \text{ tons}}{4.78\ t/m^3} = 23\ 783\ m^3$
Total	364 838 m^3
Applying contingency factor	1.3
Total volume (rounded)	480 000 m^3

Appendix C

Dredging Projects Realized with the Amphibex

DREDGING PROJECTS WITH AMPHIBEX

Summary of Reports Review

Project	Purpose	In situ Sediments Volume	% of Solids	Production Rate (in situ sediment)	Unit Cost
SEDTEC General Information	-	-	> 45 %	50 m^3/hr (mechanical); 100 m^3/hr (hydraulically)	15 - 22 $ US/m^3
City of Scarborough (Great Lakes)	Maintenance	43 000 m^3	25 - 35 %	30 to 50 m^3/hr	6.5 $ US/m^3
Welland river Reef (Great Lakes)	Environmental Clean-up	9 833 m^3	8 % (max 18.8 %)	13 to 40 m^3/hr 120 m^3/hr (occasionnally)	14.4 $ US/m^3
Welland river demonstration (Great Lakes)	Environmental Clean-up	127 m^3	-	10 to 20 m^3/hr (estimated)	2 551 $ US/m^3
Clark Island Sediment Project	Environmental Clean-up	120 000 m^3	15 - 25 %	20 m^3/hr	20 - 29 $ US/m^3

Appendix D

Detailed Cost Estimate

Pyrite Cinders Sediments Dredging and On-Island Disposal

TABLE 2
DREDGING OF SEDIMENTS AND ON-ISLAND DISPOSAL - REVISED COST ESTIMATE

DESCRIPTION	QTY	UNIT	LABOUR			EQUIPMENT		MATERIALS		SUB-CONTRACTORS		Contractor Overhead and Profit	Total Unit Price	Total Cost
			Total Man-hours	Average Hourly Labour Rate	Cost	Cost Per Unit	Cost	Cost per Unit	Cost	Cost per unit	Cost			
100 GENERAL REQUIREMENTS														
101 MOBILISATIONS, DEMOBILISATIONS, SITE INSTALLATION AND TEMPORARY ROADS	1	lot										1 442 000.00 $		1 442 000 $
200 CONSTRUCTION OF THE CONFINING DISPOSAL FACILITY														
201 CELL EXCAVATION AND BOTTOM GRADING	71 100	m³	2 026	42.44 $	86 000 $	1.60 $	113 600 $	- $	- $	2.18 $	155 200.00 $	53 200.00 $	5.74 $	408 000 $
202 CELL CONSTRUCTION	28 000	m³	877	41.83 $	36 700 $	0.93 $	25 900 $	- $	- $	- $	- $	9 400.00 $	2.57 $	72 000 $
203 DRAINING MEMBRANE (LIXIVIATION)	31 300	m²	120	46.67 $	5 600 $	0.12 $	3 900 $	2.53 $	79 200 $	19.98 $	625 400.00 $	107 100.00 $	26.24 $	821 200 $
204 DRYING SLUDGE	22 600	m²	456	39.25 $	17 900 $	0.16 $	3 700 $	8.13 $	183 700 $	8.00 $	180 800.00 $	57 900.00 $	19.65 $	444 000 $
205 DRAIN 100 MM WITH JACKET - Lixivation	850	m	126	40.54 $	5 100 $	2.26 $	1 900 $	12.00 $	10 200 $	- $	- $	2 600.00 $	23.29 $	19 800 $
206 DRAIN 150 MM WITH JACKET - Lixivation	170	m	25	39.75 $	1 000 $	2.26 $	400 $	15.00 $	2 600 $	- $	- $	600.00 $	27.06 $	4 600 $
207 DRAIN BIG "O" 200 MM	720	m	112	40.18 $	4 500 $	1.41 $	1 000 $	16.00 $	11 500 $	- $	- $	2 600.00 $	27.22 $	19 600 $
208 CRUSHED STONE 10-20 MM	1 400	m³	69	40.54 $	2 800 $	0.62 $	900 $	14.50 $	20 300 $	- $	- $	3 600.00 $	19.71 $	27 600 $
209 CRUSHED STONE 0-20 MM	35	m³	13	38.61 $	500 $	4.65 $	200 $	14.50 $	500 $	- $	- $	200.00 $	40.00 $	1 400 $
210 FILLING OF CELL WITH CONT. SEDIMENTS	19	mth	0	- $	- $	- $	- $	- $	- $	48.50 $	368 600.00 $	55 300.00 $	22 310.53 $	423 900 $
211 MEMBRANE	27 800	m²	528	39.38 $	20 800 $	0.19 $	5 200 $	13.40 $	372 500 $	- $	- $	59 800.00 $	16.49 $	458 300 $
212 SAND LAYER	11 200	m³	414	40.78 $	16 900 $	0.52 $	5 800 $	11.00 $	123 200 $	- $	- $	21 900.00 $	14.98 $	167 800 $
213 TILL LAYER	16 700	m³	785	41.79 $	32 800 $	1.81 $	30 100 $	- $	- $	1.94 $	32 400.00 $	14 300.00 $	6.56 $	109 600 $
214 TOP SOIL LAYER AND SEEDING	5 600	m³	276	40.90 $	11 300 $	1.47 $	8 300 $	1.49 $	8 300 $	6.91 $	38 700.00 $	10 000.00 $	13.68 $	76 600 $
300 WATER TREATMENT SYSTEM														
301 STRIPPING TOP SOIL AND INITIAL GRADE	2 700	m³	169	41.96 $	7 100 $	1.81 $	4 900 $	- $	- $	2.59 $	7 000.00 $	2 800.00 $	8.07 $	21 800 $
302 CONSTRUCTION OF DYKES	17 400	m³	545	41.82 $	22 800 $	0.90 $	15 700 $	1.77 $	30 800.00 $	- $	- $	10 400.00 $	4.58 $	79 700 $
303 CONSTRUCTION OF DYKES-CLAY COVER	1 596	m³	57	41.77 $	2 400 $	1.14 $	1 800.00 $	5.95 $	9 500.00 $	- $	- $	2 100.00 $	9.90 $	15 800 $
304 CONSTRUCTION OF DYKES-SAND BOTTOM	1 650	m³	45	42.65 $	1 900 $	0.52 $	800.00 $	11.00 $	18 200.00 $	- $	- $	3 100.00 $	14.55 $	24 000 $
305 SLUDGE INTAKE PRIMARY PONDS	220	m	201	40.27 $	8 100 $	8.29 $	1 800.00 $	58.88 $	13 000.00 $	- $	- $	3 400.00 $	119.55 $	26 300 $
306 OVERFLOW AND PUMPING WELL PRIM.PONDS	2	LOT	248	41.94 $	10 400 $	3 230.00 $	6 500.00 $	14 384.84 $	28 800.00 $	- $	- $	6 800.00 $	26 250.00 $	52 500 $
307 SLUDGE INTAKE (SECONDARY PONDS)	220	m	201	40.27 $	8 100 $	8.29 $	1 800.00 $	58.88 $	13 000.00 $	- $	- $	3 400.00 $	119.55 $	26 300 $
308 OVERFLOW AND PUMPING WELL SEC.PONDS	2	LOT	248	41.94 $	10 400 $	3 230.00 $	6 500.00 $	14 384.84 $	28 800.00 $	- $	- $	6 800.00 $	26 250.00 $	52 500 $
309 SEDIMENT REMOVAL FROM PONDS TO CELL	19	mth	13 110	40.24 $	527 500 $	28 200.00 $	535 800.00 $	- $	- $	- $	- $	159 500.00 $	64 357.89 $	1 222 800 $
310 PONDS REMOVAL -EQUIPMENT	1	lot	223	40.00 $	8 900 $	7 450.00 $	7 500.00 $	- $	- $	- $	- $	2 400.00 $	18 800.00 $	18 800 $
311 PONDS REMOVAL - SEE CELL COVERING	1	lot	0	- $	- $	- $	- $	- $	- $	- $	- $	- $	- $	- $
312 PONDS REMOVAL - SITE RESTORATION	17 500	m²	445	41.35 $	18 400 $	0.75 $	13 200.00 $	0.93 $	16 200.00 $	1.00 $	17 500.00 $	9 800.00 $	4.29 $	75 100 $
313 ALLOW. FOR SUPPLY OF WATER TREATMENT UNIT	1	LOT	0		- $	- $	- $	200 000.00 $	200 000 $	800 000.00 $	800 000.00 $	150 000.00 $	1 150 000 $	1 150 000 $
314 ALLOW. FOR OPER.ATION OF A WATER TREA. UNIT	72 000	m³	0	#DIV/0!	- $	- $	- $	- $	- $	30.00 $	2 160 000 $	324 000.00 $	34.50 $	2 484 000 $
400 ON-ISLAND EXCAVATION														
401 EXCAV. & DISPOSAL OF CONTAMINATED MATERIALS	5 250	m³	189	42.33 $	8 000 $	0.69 $	3 600 $	- $	- $	1.94 $	10 200.00 $	3 300.00 $	4.78 $	25 100 $
402 BACKFILL OF EXCAVATION	5 250	m³	259	40.93 $	10 600 $	0.78 $	4 100 $	5.70 $	29 900 $	- $	- $	6 700.00 $	9.77 $	51 300 $
500 DREDGING														
501 MOBIL. OR DEMOB. OF DREDGING EQUIP.	6	times	2 610	40.92 $	106 800 $	18 250.00 $	109 500 $	1 666.67 $	10 000 $	- $	- $	34 000.00 $	43 383.33 $	260 300 $
502 DREDGING OF SEDIMENTS (MUD)	480 000	m³	22 400	40.78 $	913 400 $	4.77 $	2 291 200 $	- $	- $	- $	- $	480 700.00 $	7.68 $	3 685 300 $
503 DREDGING OF SEDIMENTS - FINAL CORRECTIONS	3	th (60	640	40.78 $	26 100 $	26 013.66 $	78 100 $	- $	- $	- $	- $	15 600.00 $	39 913.38 $	119 800 $
504 INSTALLATION OF TURBIDITY BARRIERS	7	set up	1 960	40.26 $	78 900 $	7 200.00 $	50 400 $	10 890.17 $	76 200 $	8 000.00 $	56 000.00 $	39 200.00 $	42 957.14 $	300 700 $
600 REVEGETATION														
601 ALLOWANCE FOR ON-ISLAND REVEGETATION WORKS	1	LOT								150 000.00 $	150 000.00 $			150 000 $
700 LABORATORY TESTS														
701 TURBIDITY BARRIERS	1	LOT								30 000.00 $	30 000.00 $			30 000 $
702 CONFORMITY TEST ON RIVER BOTTOM SEDIMENTS AFTER DREDGING SEDIMENTS	1	LOT								50 000.00 $	50 000.00 $			50 000 $
703 TESTS ON DISCHARGE WATER FROM SETTLING POND	1	LOT								50 000.00 $	50 000.00 $			50 000 $
SUB-TOTAL					2 011 700 $		3 334 100 $		1 286 400 $		4 731 800 $	3 104 500 $		14 468 500 $
CONTINGENCIES 15%					301 755 $		500 115 $		192 960 $		709 770 $	465 675 $		2 170 275 $
TOTAL					2 313 455 $		3 834 215 $		1 479 360 $		5 441 570 $	3 570 175 $		16 638 775 $
TOTAL (rounded)					2 313 000 $		3 834 000 $		1 479 000 $		5 442 000 $	3 570 000 $		16 639 000 $

TECSULT

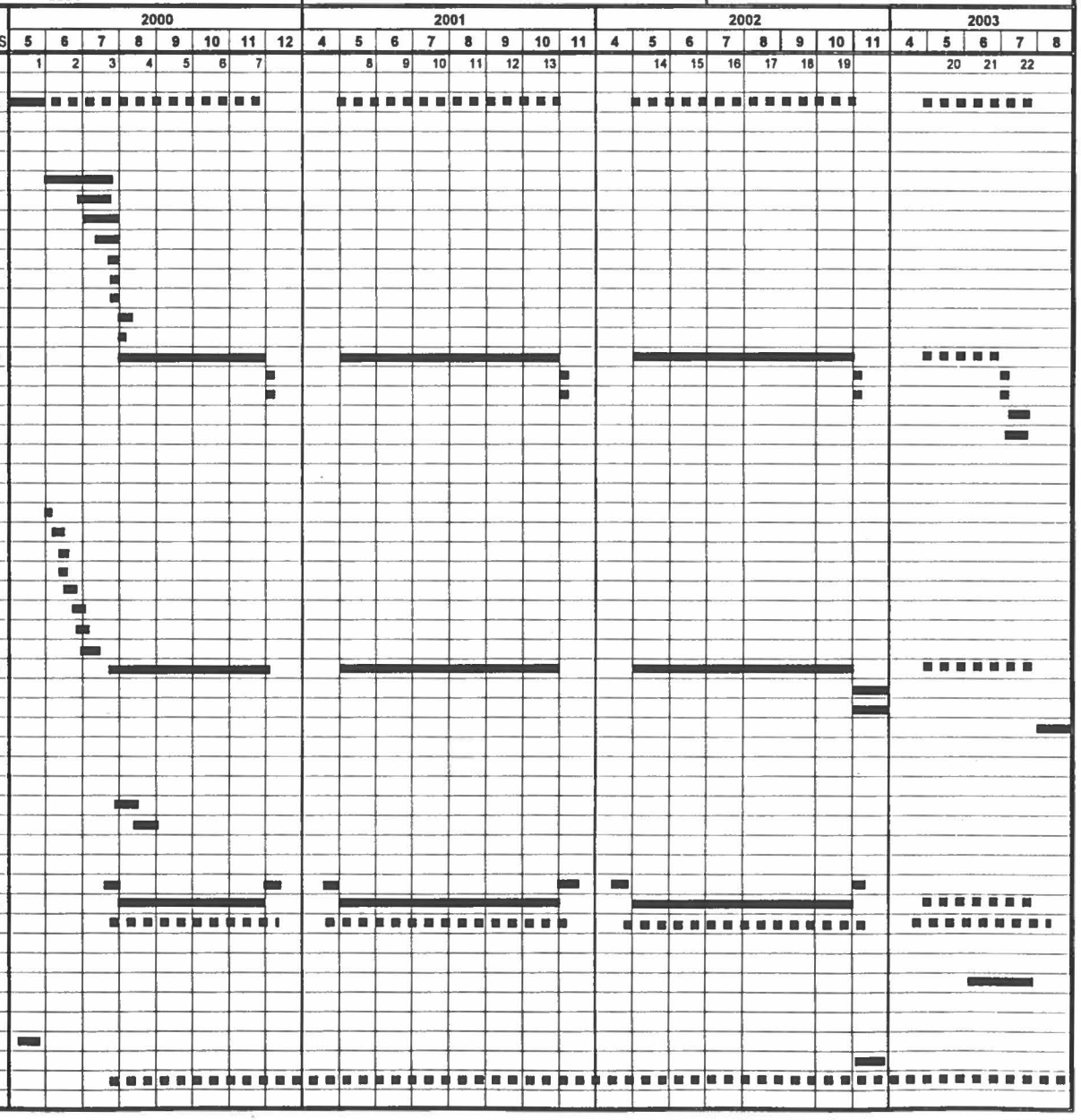
PRELIMINARY SCHEDULE

DATE: 23/09/99

PROJECT **AlliedSignal**
DREDGING OF SEDIMENTS AND ON-ISLAND DISPOSAL

CONTRACT 5804

ACTIVITIES	DAYS
001 MOBILISATION, DEMOBILISATION, SITE INSTALLATIONS, ACCESS ROADS, SURVEYS	N/A
200 CONSTRUCTION OF THE CONFINING DISPOSAL FACILITY	
201 CELL EXCAVATION AND BOTTOM GRADING	40
202 CELL CONSTRUCTION	20
203 DRAINING MEMBRANE (LIXIVIATION)	10
204 DRYING SLUDGE	10
205 DRAIN 100 MM WITH JACKET (LIXIVIATION)	5
206 DRAIN 150 MM WITH JACKET (LIXIVIATION)	2
207 DRAIN BIG "O" 200 MM	5
208 CRUSHED STONE 10-20MM	3
209 CRUSHED STONE 0-20MM	1
210 FILLING OF CELL WITH CONTAMINATED SED.	380
211 COVERING OF CELL WITH MEMBRANE	10
212 COVERING OF CELL WITH SAND LAYER	12
213 COVERING OF CELL WITH TILL LAYER	20
214 COVERING OF CELL WITH TOP SOIL AND SEEDING	10
300 WATER TREATMENT SYSTEM	
301 STRIPPING OF TOP SOIL AND INITIAL GRADE	5
302 CONSTRUCTION OF DYKES	15
303 CONSTRUCTION OF DYKES - CLAY COVER	3
304 CONSTRUCTION OF DYKES - SAND BOTTOM	3
305 SLUDGE INTAKE (PRIMARY PONDS)	7
306 OVERFLOW AND PUMPING WELL (PRIM.)	5
307 SLUDGE INTAKE (SECONDARY PONDS)	7
308 OVERFLOW AND PUMPING WELL (SECOND.)	5
309 SEDIMENT REMOVAL FROM PONDS TO CELL	380
310 PONDS REMOVAL - EQUIPMENT	5
311 PONDS REMOVAL (SEE CELL COVERING)	0
312 PONDS REMOVAL - SITE RESTORATION	10
400 ON - ISLAND EXCAVATION	
401 EXCAVATION AND DISPOSAL OF CONTAMINATED MATERIALS	
402 BACKFILL OF EXCAVATION	
500 DREDGING OF SEDIMENTS	
501 MOB. AND DEMOB. OF DREDGING EQUIP.	
502 DREDGING OF SEDIMENTS	380
503 INSTAL. AND REMOVE TURBIDITY BARRIERS	
600 REVEGETATION	
601 ON ISLAND REVEGETATION WORKS	30
700 LABORATORY TESTS	
701 TURBIDITY BARRIERS	
702 CONFORMITY ON RIVER BOTTOM SEDIMENTS	
703 DISCHARGE WATER FROM SETTLING PONDS	



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TECSULT

DETAILED ESTIMATE

DATE: 23/09/99

PROJECT AlliedSignal
SEDIMENTS DREDGING AND CONF. DISP.

CONTRACT 5804

PREPARED BY:

CHECKED BY :

APPROVED BY :

CODE	DESCRIPTION	QUANT.	UN	MAN HOURS	LABOUR COST		MATERIAL COST		CONSTR. EQUIP.		TOTAL	
					UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL
1.1	**Indirect labour**											
	Project manager	22	mth	220	40.00	193 600 $		- $		- $		193 600 $
	Engineer	22	mth	220	35.00	169 400 $		- $		- $		169 400 $
	Safety officer	19	mth	220	35.00	146 300 $		- $		- $		146 300 $
	Clerk	11	mth	220	18.00	43 560 $		- $		- $		43 560 $
	Store keeper	11	mth	220	18.00	43 560 $		- $		- $		43 560 $
	Labor	11	mth	220	25.00	60 500 $		- $		- $		60 500 $
	Guards	22	mth	220	15.00	72 600 $		- $		- $		72 600 $
	Labor (maintenance and cleaning)	44	mth	110	25.00	121 000 $		- $		- $		121 000 $
	Surveyors	44	mth	50	25.00	55 000 $		- $		- $		55 000 $
	Daily Transportation time	0	m-days	1	20.00	- $		- $		- $		- $
	Weekly transportation time	0	m-days	2	20.00	- $		- $		- $		- $
	Mobilisation	4	lot	80	25.00	8 000 $		- $		- $		8 000 $
	Cleaning	22	weeks	40	20.00	17 600 $		- $	2 000 $	44 000 $		61 600 $
	Demobilisation	4	lot	80	25.00	8 000 $		- $		- $		8 000 $
	Others					- $		- $		- $		- $
	Sub-total , Indirect labour					**939 120 $**		**- $**		**44 000 $**		**983 120 $**
1.2	Fringe Benefits on indirect Labour				45%	422 604 $		- $		- $		422 604 $
	Sub-Total, Fringe Benefits on Indirect Labour					**422 604 $**		**- $**		**- $**		**422 604 $**

TECSULT

DETAILED ESTIMATE

DATE: 23/09/99

PROJECT AlliedSignal
SEDIMENTS DREDGING AND CONF. DISP.

CONTRACT 5804

PREPARED BY:

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CODE	DESCRIPTION	QUANT.	UN	MAN HOURS	LABOUR COST		MATERIAL COST		CONSTR. EQUIP.		TOTAL	
					UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL
1.3	**Project Expenses**											
	Performance Bond	14000	K$			- $	6.00	84 000 $		- $		84 000 $
	Insurance - Risks (1 month)	14000	K$			- $	0.13	1 820 $		- $		1 820 $
	Insurance - Risks (Other months)	21	mth			- $	1820.00	38 220 $		- $		38 220 $
	Insurance - Civil Liabilities	14000	K$			- $	2.00	28 000 $		- $		28 000 $
	Electrical Power	22	mth			- $	2000.00	44 000 $		- $		44 000 $
	Drawings	1	alloc.			- $	2000.00	2 000 $		- $		2 000 $
	Photography	22	mth			- $	100.00	2 200 $		- $		2 200 $
	Engineering	1	alloc			- $	5000.00	5 000 $		- $		5 000 $
	Bid deposit	1	alloc			- $	0.00	- $		- $		- $
	Permits	1	alloc	BY THE CUSTOMER				- $		- $		- $
	Various licenses	1	alloc			- $		- $		- $		- $
	Trip expenses (management visit)	1	lot			- $	1000.00	1 000 $		- $		1 000 $
	Sub -total , Project expenses					- $		**206 240 $**		- $		**206 240 $**
1.4	**Field Expenses**											
	Security - Fences , guardrail etc	1	alloc			- $	10000.00	10 000 $		- $		10 000 $
	Security - Fire protection	1	alloc			- $	1000.00	1 000 $		- $		1 000 $
	Phone line installation	1	lot			- $	500.00	500 $		- $		500 $
	Phone lines	22	mth			- $	150.00	3 300 $		- $		3 300 $
	Portable toilets	44	mth			- $	150.00	6 600 $		- $		6 600 $
	Drinkable water service	22	mth			- $	50.00	1 100 $		- $		1 100 $
	Electrical Installation	3	inst.			- $	5000.00	15 000 $		- $		15 000 $
	Water and compressed air installation	1	inst.			- $		- $		- $		- $
	Pumping (4 pumps of 2 hp)	0	mth			- $	720.00	- $		- $		- $
	Temporary heating	1	mth			- $		- $		- $		- $

TECSULT

DETAILED ESTIMATE

DATE: 23/09/99

PROJECT AlliedSignal
SEDIMENTS DREDGING AND CONF. DISP.

CONTRACT 5804

PREPARED BY:

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CODE	DESCRIPTION	QUANT.	UN	MAN HOURS	LABOUR COST		MATERIAL COST		CONSTR. EQUIP.		TOTAL	
					UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL
	Transport of Personnel	0	trips	1	15.00	- $		- $		- $		- $
	Lodging of Personnel	0	m-days	1	76.00	- $		- $		- $		- $
	Temporary offices (Trailers)	44	mth			- $		- $	350.00	15 400 $		15 400 $
	Lunch Room	22	mth			- $		- $	350.00	7 700 $		7 700 $
	Temporary Warehouses (containers)	44	mth			- $		- $	200.00	8 800 $		8 800 $
	Office expenses	22	mth			- $	300.00	6 600 $		- $		6 600 $
	Rubbish containers	22	mth			- $	75.00	1 650 $		- $		1 650 $
	Transport of rubbish	22	trips			- $	350.00	7 700 $		- $		7 700 $
	Fax	22	mth			- $	75.00	1 650 $		- $		1 650 $
	Copiers	22	mth			- $	150.00	3 300 $		- $		3 300 $
	Potable Radios	22	mth			- $	300.00	6 600 $		- $		6 600 $
	Temporary roads to build											
	300 M by 10 M by 30 CM	1000	m³	0.08	35.00	2 800 $	15.00	15 000 $	1.25	1 250 $		19 050 $
	Enlargement of existing roads											
	500 ML by 6 M	1000	m³	0.08	35.00	2 800 $	15.00	15 000 $	1.25	1 250 $		19 050 $
	Platform for Work area (200 x 50 x 30 cm)	3000	m³	0.08	35.00	8 400 $	15.00	45 000 $	1.25	3 750 $		57 150 $
	Maintenance of temporary roads	88	weeks	10	35.00	30 800 $	2000.00	176 000 $	600.00	52 800 $		259 600 $
	Sub-total - Field expenses					**44 800 $**		**316 000 $**		**90 950 $**		**451 750 $**
15	**Construction equipment**											
	Mobilisation of equipment											
	BARGES	1		2					2000.00	4 000 $		4 000 $

TECSULT

DETAILED ESTIMATE

DATE: 23/09/99

PROJECT AlliedSignal
SEDIMENTS DREDGING AND CONF. DISP.

CONTRACT 5804

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CODE	DESCRIPTION	QUANT.	UN	MAN HOURS	LABOUR COST		MATERIAL COST		CONSTR. EQUIP.		TOTAL	
					UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL
	hydraulic excavator	2		2					1500.00	6 000 $		6 000 $
	bulldozer	2		2					1500.00	6 000 $		6 000 $
	backhoe excavator	2		2					500.00	2 000 $		2 000 $
	containers	3		2					300.00	1 800 $		1 800 $
	small shop	2		2					300.00	1 200 $		1 200 $
	trailers	2		2					400.00	1 600 $		1 600 $
	dinning room	1		2					400.00	800 $		800 $
	Demobilisation of equipment											
	BARGES	1		2					2000.00	4 000 $		4 000 $
	hydraulic excavator	2		2					1500.00	6 000 $		6 000 $
	bulldozer	2		2					1500.00	6 000 $		6 000 $
	backhoe excavator	2		2					500.00	2 000 $		2 000 $
	containers	3		2					300.00	1 800 $		1 800 $
	small shop	2		2					300.00	1 200 $		1 200 $
	trailers	2		2					400.00	1 600 $		1 600 $
	dinning room	1		2					400.00	800 $		800 $
	Sub-total, Construction equipment					- $		- $		**46 800 $**		**46 800 $**
	SUB-TOTAL INDIRECT COSTS					**1 406 524 $**		**522 240 $**		**181 750 $**		**2 110 514 $**
1.5	**Administrative costs**											
	Financial Cost					- $		- $		- $		- $
	on Labour (1%)	3036	K$			- $	10.00	30 360 $		- $		30 360 $
	on Others (0.5%)	8327	K$			- $	5.00	41 635 $		- $		41 635 $
	Main Office (1%)	11363	K$			- $	10.00	113 630 $		- $		113 630 $

TECSULT

DETAILED ESTIMATE

DATE: 23/09/99

PROJECT AlliedSignal
SEDIMENTS DREDGING AND CONF. DISP.

CONTRACT 5804

PREPARED BY:

CHECKED BY :

APPROVED BY :

CODE	DESCRIPTION	QUANT.	UN	MAN HOURS	LABOUR COST		MATERIAL COST		CONSTR. EQUIP.		TOTAL	
					UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL
1.6	Profit											
	on direct cost (6%) (already included)	11363	K$			- $	60.00	681 780 $		- $		681 780 $
	on indirect cost (6%)	2111	K$			- $	60.00	126 660 $		- $		126 660 $
	Sub-total Administrative costs and profit					- $		994 065 $		- $		994 065 $
	Total indirect cost including administrative											
	costs and profit					1 406 524 $		1 516 305 $		181 750 $		3 104 579 $
	TOTAL DIRECT COST INCLUDING ADM. AND PROFIT OF 15%											13 026 400 $
	LESS 15 % ALREADY INCLUDED											(1 662 500) $
	NET DIRECT COST											11 363 900 $
	INDIRECT COST CALCULATED											3 104 600 $
	LESS INDIRECT ALREADY INCLUDED											(1 662 500) $
	INDIRECT COST TO BE ADDED											1 442 100 $
	TOTAL COST OF PROJECT											14 468 500 $
1.7	Ratio of indirect vs. direct costs											
	Direct costs											11 363 900 $
	Indirect costs											3 104 600 $
	Total cost											14 468 500 $
	Ratio											127%

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	71100	m^3	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	355.5	hours	
Sub-Pkg. :							
Activity :	CELL EXCAVATION AND BOTTOM GRADING			Production	200.000	m^3/h	
Quantity	Unit		Description	Manhours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	356	50.00 $	8 888 $	
3.00	EA	-	EQUIP. OPERATOR	356	45.24 $	48 248 $	
2.00	EA	-	LABOR	356	36.49 $	25 944 $	
0.10	EA	-	MECHANIC	356	44.44 $	1 580 $	
0.10	EA	-	LABOR - FUEL	356	36.49 $	1 297 $	
			Number of hours, unit price, sub-total	2026.35	1.21 $	85 957 $	24.2%
		B)	Equipment				
1.00	EA	-	BULLDOZER	356	50.00 $	17 775 $	
2.00	EA	-	HYDRAULIC SHOVEL 245	356	129.00 $	91 719 $	
0.10	EA	-	SERVICE TRUCK	356	35.00 $	1 244 $	
0.10	EA	-	FUEL TRUCK	356	30.00 $	1 067 $	
0.50	EA	-	PICK UP	356	10.00 $	1 778 $	
			unit price, sub-total		1.60 $	113 582 $	32.0%
		C)	Sub-contractor				
9	EA	-	3 AXLES DUMP-TRUCK (8M3/3TRIP/H)	356	48.50 $	155 176 $	
			unit price, sub-total		2	155 176 $	43.7%
		D)	Materials				
		-				- $	
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	4.99 $	354 715 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	0.75 $	53 207 $	
			TOTAL		5.74 $	407 923 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	28000	m³	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	186.7	hours	
Sub-Pkg. :							
Activity :	CELL CONSTRUCTION			Production	150.000	m³/h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.50	EA.	-	FOREMAN	187	50.00 $	4 667 $	
2.00	EA.	-	EQUIP. OPERATOR	187	45.24 $	16 890 $	
2.00	EA.	-	LABOR	187	36.49 $	13 623 $	
0.10	EA.	-	MECHANIC	187	44.44 $	830 $	
0.10	EA.	-	LABOR - FUEL	187	36.49 $	681 $	
			Number of hours, unit price, sub-total	877.3333	1.31 $	36 690 $	58.6%
		B)	Equipment				
2.00	EA.	-	BULLDOZER	187	50.00 $	18 667 $	
1.00	EA.	-	SERVICE TRUCK	187	35.00 $	6 533 $	
0.10	EA.	-	FUEL TRUCK	187	30.00 $	560 $	
0.10	EA.	-	PICK UP	187	10.00 $	187 $	
			unit price, sub-total		0.93 $	25 947 $	41.4%
		C)	Sub-contractor				
		-		187	- $	- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
		-			- $	- $	
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	2.24 $	62 637 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	0.34 $	9 395 $	
			TOTAL		2.57 $	72 032 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	31300	m^2	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	80.0	hours	
Sub-Pkg. :							
Activity :	DRAINING MEMBRANE (LIXIVIATION)			Production	391.250	m^2 / h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	80	50.00 $	2 000 $	
1.00	EA	-	EQUIP. OPERATOR	80	45.24 $	3 619 $	
0.00	EA	-	LABOR	80	36.49 $	- $	
0.00	EA	-	MECHANIC	80	44.44 $	- $	
0.00	EA	-	LABOR - FUEL	80	36.49 $	- $	
			Number of hours, unit price, sub-total	120	0.18 $	5 619 $	0.8%
		B)	Equipment				
0.50	EA	-	BULL	80	23.00 $	920 $	
0.50	EA	-	HYDRAULIC SHOVEL	80	74.00 $	2 960 $	
0.00	EA	-	SERVICE TRUCK	80	35.00 $	- $	
0.00	EA	-	FUEL TRUCK	80	30.00 $	- $	
0.00	EA	-	PICK UP	80	10.00 $	- $	
			unit price, sub-total		0.12 $	3 880 $	0.5%
		C)	Sub-contractor				
		-	SUPPLY AND INSTALLATION OF			- $	
			MEMBRANE SYSTEM				
31 300	M2	-	GEOTEXTILE 7619	1	3.43 $	107 359 $	
31 300	M2	-	GEOSYNTHETIC EPDM 1.5 MM	1	6.54 $	204 702 $	
31 300	M2	-	GEODRAIN	1	3.47 $	108 611 $	
31 300	M2	-	GEOSYNTHETIC EPDM 1.5 MM	1	6.54 $	204 702 $	
			unit price, sub-total		20	625 374 $	87.6%
		D)	Materials				
14 400	TM	-	CLASS A SAND		2.85 $	41 040 $	
14 400	TM	-	DELIVERY AT SITE		2.65 $	38 160 $	
			unit price, sub-total		3 $	79 200 $	11.1%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	22.81 $	714 073 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	3.42 $	107 111 $	

			TOTAL		26.24 $	821 184 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	22600	m^2	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	80.0	hours	
Sub-Pkg. :							
Activity :	DRYING SLUDGE			Production	282.500	m^2 / h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	80	50.00 $	2 000 $	
1.00	EA	-	EQUIP. OPERATOR	80	45.24 $	3 619 $	
4.00	EA	-	LABOR	80	36.49 $	11 677 $	
0.10	EA	-	MECHANIC	80	44.44 $	356 $	
0.10	EA	-	LABOR - FUEL	80	36.49 $	292 $	
			Number of hours, unit price, sub-total	456	0.79 $	17 943 $	4.6%
		B)	Equipment				
1.00	EA	-	BACK-HOE	80	35.00 $	2 800 $	
0.10	EA	-	SERVICE TRUCK	80	35.00 $	280 $	
0.10	EA	-	FUEL TRUCK	80	30.00 $	240 $	
0.50	EA	-	PICK UP	80	10.00 $	400 $	
			unit price, sub-total		0.16 $	3 720 $	1.0%
		C)	Sub-contractor				
		-	SUPPLY AND INSTALLATION OF		- $	- $	
			MEMBRANE SYSTEM				
22 600	M2	-	GEOTEXTILE 7643	1	8.00 $	180 800 $	
			unit price, sub-total		8	180 800 $	46.8%
		D)	Materials				
13 600	TM	-	CRUSHED STONE 20 MM		5.00 $	68 000 $	
14 400	TM	-	DELIVERY AT SITE		2.25 $	32 400 $	
10	EA	-	CATCH BASIN 5M		2 000.00 $	20 000 $	
11 500	ML	-	PERFORATED PVC PIPE		5.50 $	63 250 $	
			unit price, sub-total		8 $	183 650 $	47.6%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	17.08 $	386 113 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	2.56 $	57 917 $	
			TOTAL		19.65 $	444 030 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	850	m	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	34.0	hours	
Sub-Pkg. :							
Activity :	DRAIN 100 MM WITH JACKET - Lixivation			Production	25.000	m/ h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	34	50.00 $	850 $	
1.00	EA	-	EQUIP. OPERATOR	34	45.24 $	1 538 $	
2.00	EA	-	LABOR	34	36.49 $	2 481 $	
0.10	EA	-	MECHANIC	34	44.44 $	151 $	
0.10	EA	-	LABOR - FUEL	34	36.49 $	124 $	
			Number of hours, unit price, sub-total	125.8	6.05 $	5 145 $	29.8%
		B)	Equipment				
1.00	EA	-	SMALL TOOLS	34	10.00 $	340 $	
1.00	EA	-	BACK-HOE	34	35.00 $	1 190 $	
0.10	EA	-	SERVICE TRUCK	34	35.00 $	119 $	
0.10	EA	-	FUEL TRUCK	34	30.00 $	102 $	
0.50	EA	-	PICK UP	34	10.00 $	170 $	
			unit price, sub-total		2.26 $	1 921 $	11.1%
		C)	Sub-contractor				
		-		34	- $	- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
850	m	-	PEHD PIPE WITH GEOTEXTILE		12.00 $	10 200 $	
			unit price, sub-total		12 $	10 200 $	59.1%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	20.31 $	17 266 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	3.05 $	2 590 $	
			TOTAL		23.36 $	19 855 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	170	m	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	6.8	hours	
Sub-Pkg. :							
Activity :	DRAIN 150 MM WITH JACKET - Lixivation			Production	25.000	m/ h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	7	50.00 $	170 $	
1.00	EA	-	EQUIP. OPERATOR	7	45.24 $	308 $	
2.00	EA	-	LABOR	7	36.49 $	496 $	
0.10	EA	-	MECHANIC	7	44.44 $	30 $	
0.10	EA	-	LABOR - FUEL	7	36.49 $	25 $	
			Number of hours, unit price, sub-total	25.16	6.05 $	1 029 $	26.0%
		B)	Equipment				
1.00	EA	-	SMALL TOOLS	7	10.00 $	68 $	
1.00	EA	-	BACK-HOPE	7	35.00 $	238 $	
0.10	EA	-	SERVICE TRUCK	7	35.00 $	24 $	
0.10	EA	-	FUEL TRUCK	7	30.00 $	20 $	
0.50	EA	-	PICK UP	7	10.00 $	34 $	
			unit price, sub-total		2.26 $	384 $	9.7%
		C)	Sub-contractor				
		-		7	- $	- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
170	m	-	PEHD PIPE WITH GEOTEXTILE		15.00 $	2 550 $	
			unit price, sub-total		15 $	2 550 $	64.3%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	23.31 $	3 963 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	3.50 $	594 $	
			TOTAL		26.81 $	4 558 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	720	m	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	35.0	hours	
Sub-Pkg. :							
Activity :	DRAIN BIG "O" 200 MM			Production	20.571	m^2/h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	35	50.00 $	875 $	
0.50	EA	-	EQUIP. OPERATOR	35	45.24 $	792 $	
2.00	EA	-	LABOR	35	36.49 $	2 554 $	
0.10	EA	-	MECHANIC	35	44.44 $	156 $	
0.10	EA	-	LABOR - FUEL	35	36.49 $	128 $	
			Number of hours, unit price, sub-total	112	6.26 $	4 504 $	26.4%
		B)	Equipment				
0.50	EA	-	BACKHOE	35	35.00 $	613 $	
0.10	EA	-	SERVICE TRUCK	35	35.00 $	123 $	
0.10	EA	-	FUEL TRUCK	35	30.00 $	105 $	
0.50	EA	-	PICK UP	35	10.00 $	175 $	
			unit price, sub-total		1.41 $	1 015 $	6.0%
		C)	Sub-contractor				
		-		35	- $	- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
720	m	-	BIG O PIPE 200 MM		16.00 $	11 520 $	
			unit price, sub-total		16 $	11 520 $	67.6%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	23.67 $	17 039 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	3.55 $	2 556 $	
			TOTAL		27.22 $	19 595 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	1400	m^3	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	18.7	hours	
Sub-Pkg. :							
Activity :	CRUSHED STONE 10-20 MM			Production	75.000	m^3/h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	19	50.00 $	467 $	
1.00	EA	-	EQUIP. OPERATOR	19	45.24 $	844 $	
2.00	EA	-	LABOR	19	36.49 $	1 362 $	
0.10	EA	-	MECHANIC	19	44.44 $	83 $	
0.10	EA	-	LABOR - FUEL	19	36.49 $	68 $	
			Number of hours, unit price, sub-total	69.06667	2.02 $	2 825 $	11.8%
		B)	Equipment				
1.00	EA	-	BACKHOE	19	35.00 $	653 $	
0.10	EA	-	SERVICE TRUCK	19	35.00 $	65 $	
0.10	EA	-	FUEL TRUCK	19	30.00 $	56 $	
0.50	EA	-	PICK UP	19	10.00 $	93 $	
			unit price, sub-total		0.62 $	868 $	3.6%
		C)	Sub-contractor				
		-		19	- $	- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
2 800	t	-	CRUSHED STONE 10-20MM		5.00 $	14 000 $	
2 800	t	-	DELIVERY TO SITE		2.25 $	6 300 $	
			unit price, sub-total		15 $	20 300 $	84.6%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	17.14 $	23 993 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	2.57 $	3 599 $	
			TOTAL		19.71 $	27 591 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	35	m^3	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	3.5	hours	
Sub-Pkg. :							
Activity :	CRUSHED STONE 0-20 MM			Production	10.000	m^3/h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	4	50.00 $	88 $	
1.00	EA	-	EQUIP. OPERATOR	4	45.24 $	158 $	
2.00	EA	-	LABOR	4	36.49 $	255 $	
0.10	EA	-	MECHANIC	4	44.44 $	16 $	
0.10	EA	-	LABOR - FUEL	4	36.49 $	13 $	
			Number of hours, unit price, sub-total	12.95	15.13 $	530 $	44.1%
		B)	Equipment				
1.00	EA	-	BACKHOE	4	35.00 $	123 $	
0.10	EA	-	SERVICE TRUCK	4	35.00 $	12 $	
0.10	EA	-	FUEL TRUCK	4	30.00 $	11 $	
0.50	EA	-	PICK UP	4	10.00 $	18 $	
			unit price, sub-total		4.65 $	163 $	13.6%
		C)	Sub-contractor				
		-		4	- $	- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
70	t	-	CRUSHED STONE 0-20MM		5.00 $	350 $	
70	t	-	DELIVERY TO SITE		2.25 $	158 $	
			unit price, sub-total		15 $	508 $	42.3%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	34.28 $	1 200 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	5.14 $	180 $	
			TOTAL		39.42 $	1 380 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	19	mth	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	3 800.0	hours	
Sub-Pkg. :							
Activity :	FILLING OF CELL WITH CONT. SEDIMENTS			Production	NA	m^2/h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
		-		3 800	- $	- $	
		-	SEE SEDIMENT REMOVAL FROM	3 800	- $	- $	
		-	PONDS	3 800	- $	- $	
		-		3 800	- $	- $	
		-		3 800	- $	- $	
			Number of hours, unit price, sub-total	0	- $	- $	0.0%
		B)	Equipment				
		-		3 800	- $	- $	
		-	SEE SEDIMENT REMOVAL FROM	3 800	- $	- $	
		-	PONDS	3 800	- $	- $	
		-		3 800	- $	- $	
			unit price, sub-total		- $	- $	0.0%
		C)	Sub-contractor				
2.00	EA	-	3 AXLES DUMP TRUCK	3 800	48.50 $	368 600 $	
			unit price, sub-total		19 400	368 600 $	100.0%
		D)	Materials				
		-			- $	- $	
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	19 400.00 $	368 600 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	2 910.00 $	55 290 $	
			TOTAL		22 310 $	423 890 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	27800	m^2	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	92.7	hours	
Sub-Pkg. :	COVERING OF CELL						
Activity :	MEMBRANE			Production	300.000	m^2 / h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	93	50.00 $	2 317 $	
1.00	EA	-	EQUIP. OPERATOR	93	45.24 $	4 192 $	
4.00	EA	-	LABOR	93	36.49 $	13 526 $	
0.10	EA	-	MECHANIC	93	44.44 $	412 $	
0.10	EA	-	LABOR - FUEL	93	36.49 $	338 $	
			Number of hours, unit price, sub-total	528.2	0.75 $	20 784 $	5.2%
		B)	Equipment				
1.00	EA	-	BACK-HOE	93	35.00 $	3 243 $	
1.00	EA	-	SMALL TOOLS	93	10.00 $	927 $	
0.10	EA	-	SERVICE TRUCK	93	35.00 $	324 $	
0.10	EA	-	FUEL TRUCK	93	30.00 $	278 $	
0.50	EA	-	PICK UP	93	10.00 $	463 $	
			unit price, sub-total		0.19 $	5 236 $	1.3%
		C)	Sub-contractor				
		-		93	- $	- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
27 800	m^2	-	GEOTEXTILE TEXEL 7619		3.43 $	95 354 $	
27 800	m^2	-	HDPE SF 460		6.54 $	181 812 $	
27 800	m^2	-	GEOTEXTILE TEXEL 7619		3.43 $	95 354 $	
			unit price, sub-total		13 $	372 520 $	93.5%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	14.34 $	398 540 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	2.15 $	59 781 $	
			TOTAL		16.49 $	458 321 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	11200	m³	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	112.0	hours	
Sub-Pkg. :	COVERING OF CELL						
Activity :	SAND LAYER			Production	100.000	m³/ h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	112	50.00 $	2 800 $	
1.00	EA	-	EQUIP. OPERATOR	112	45.24 $	5 067 $	
2.00	EA	-	LABOR	112	36.49 $	8 174 $	
0.10	EA	-	MECHANIC	112	44.44 $	498 $	
0.10	EA	-	LABOR - FUEL	112	36.49 $	409 $	
			Number of hours, unit price, sub-total	414.4	1.51 $	16 947 $	11.6%
		B)	Equipment				
1.00	EA	-	BULLDOZER	112	40.00 $	4 480 $	
0.10	EA	-	SERVICE TRUCK	112	35.00 $	392 $	
0.10	EA	-	FUEL TRUCK	112	30.00 $	336 $	
0.50	EA	-	PICK UP	112	10.00 $	560 $	
			unit price, sub-total		0.52 $	5 768 $	4.0%
		C)	Sub-contractor				
		-		112		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
22 400	t	-	SAND CLASS A		2.85 $	63 840 $	
22 400	t	-	DELIVERY TO SITE		2.65 $	59 360 $	
			unit price, sub-total		11 $	123 200 $	84.4%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	13.03 $	145 915 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	1.95 $	21 887 $	
			TOTAL		14.98 $	167 802 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	16700	m^3	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	167.0	hours	
Sub-Pkg. :	COVERING OF CELL						
Activity :	TILL LAYER			Production	100.000	m^3 / h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	167	50.00 $	4 175 $	
2.00	EA	-	EQUIP. OPERATOR	167	45.24 $	15 110 $	
2.00	EA	-	LABOR	167	36.49 $	12 188 $	
0.10	EA	-	MECHANIC	167	44.44 $	742 $	
0.10	EA	-	LABOR - FUEL	167	36.49 $	609 $	
			Number of hours, unit price, sub-total	784.9	1.97 $	32 824 $	34.4%
		B)	Equipment				
1.00	EA	-	BULLDOZER	167	40.00 $	6 680 $	
1.00	EA	-	HYDRAULIC SHOVEL	167	129.00 $	21 543 $	
0.10	EA	-	SERVICE TRUCK	167	35.00 $	585 $	
0.10	EA	-	FUEL TRUCK	167	30.00 $	501 $	
0.50	EA	-	PICK UP	167	10.00 $	835 $	
			unit price, sub-total		1.81 $	30 144 $	31.6%
		C)	Sub-contractor				
4.00	EA	-	DUMP TRUCK 3 AXLES (8M3 @ 3 TR. /H	167	48.50 $	32 398 $	
			unit price, sub-total		1.94 $	32 398 $	34.0%
		D)	Materials				
14 000	m^3	-	TILL RECUPERATED FROM PONDS (17 400 BM^3)		N/C		
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	5.71 $	95 366 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	0.86 $	14 305 $	
			TOTAL		6.57 $	109 671 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	5600	m^3	
Work Pkg.:	DOUBLE MEMBRANE CELL			Duration	74.7	hours	
Sub-Pkg. :	COVERING OF CELL						
Activity :	TOP SOIL LAYER AND SEEDING			Production	75.000	m^2 / h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	75	50.00 $	1 867 $	
1.00	EA	-	EQUIP. OPERATOR	75	45.24 $	3 378 $	
2.00	EA	-	LABOR	75	36.49 $	5 449 $	
0.10	EA	-	MECHANIC	75	44.44 $	332 $	
0.10	EA	-	LABOR - FUEL	75	36.49 $	272 $	
			Number of hours, unit price, sub-total	276.2667	2.02 $	11 298 $	17.0%
		B)	Equipment				
1.00	EA	-	BULLDOZER D-4	75	25.00 $	1 867 $	
1.00	EA	-	PELLE POUR CLASSEMNT ET CHAR,	75	74.00 $	5 525 $	
0.10	EA	-	SERVICE TRUCK	75	35.00 $	261 $	
0.10	EA	-	FUEL TRUCK	75	30.00 $	224 $	
0.50	EA	-	PICK UP	75	10.00 $	373 $	
			unit price, sub-total		1.47 $	8 251 $	12.4%
		C)	Sub-contractor				
3.00	EA	-	3 AXLES DUMP TRUCK (8 M3 @ 3 T/HR)	75	48.50 $	10 864 $	
37 100	m^2	-	HYDRO SEEDING	1	0.75 $	27 825 $	
			unit price, sub-total		7	38 689 $	58.1%
		D)	Materials				
4 700	m^3	-	AVAILABLE FROM CELL EXCAVATION		- $	- $	
900.00	m^3	-	TOP SOIL NON SIFTED		6.60 $	5 940 $	
900.00	m^3	-	DELIVERY TO SITE		2.65 $	2 385 $	
			unit price, sub-total		1 $	8 325 $	12.5%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	11.89 $	66 563 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	1.78 $	9 984 $	
			TOTAL		13.67 $	76 547 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	2700	m^3	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	36.0	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	STRIPPING TOP SOIL AND INITIAL GRADE			Production	75.000	m^3/h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	36	50.00 $	900 $	
2.00	EA	-	EQUIP. OPERATOR	36	45.24 $	3 257 $	
2.00	EA	-	LABOR	36	36.49 $	2 627 $	
0.10	EA	-	MECHANIC	36	44.44 $	160 $	
0.10	EA	-	LABOR - FUEL	36	36.49 $	131 $	
			Number of hours, unit price, sub-total	169.2	2.62 $	7 076 $	37.4%
		B)	Equipment				
1.00	EA	-	BULLDOZER	36	50.00 $	1 800 $	
1.00	EA	-	HYDRAULIC SHOVEL FOR STOCK PILE	36	74.00 $	2 664 $	
0.10	EA	-	SERVICE TRUCK	36	35.00 $	126 $	
0.10	EA	-	FUEL TRUCK	36	30.00 $	108 $	
0.50	EA	-	PICK-UP	36	10.00 $	180 $	
			unit price, sub-total		1.81 $	4 878 $	25.8%
		C)	Sub-contractor				
4.00	EA	-	3 AXLES DUMP TRUCKS (8 M3 /3 T/H)	36	48.50 $	6 984 $	
			(2700 BM3 X 1.2 = 3240)				
			unit price, sub-total		3	6 984 $	36.9%
		D)	Materials				
		-			- $	- $	
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	7.01 $	18 938 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	1.05 $	2 841 $	
			TOTAL		8.07 $	21 779 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	17 400	m^3	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	116.0	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	CONSTRUCTION OF DYKES			Production	150.000	m^3/h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	116	50.00 $	2 900 $	
2.00	EA	-	EQUIP. OPERATOR	116	45.24 $	10 496 $	
2.00	EA	-	LABOR	116	36.49 $	8 466 $	
0.10	EA	-	MECHANIC	116	44.44 $	516 $	
0.10	EA	-	LABOR - FUEL	116	36.49 $	423 $	
			Number of hours, unit price, sub-total	545.2	1.31 $	22 800 $	32.9%
		B)	Equipment				
1.00	EA	-	BULLDOZER	116	50.00 $	5 800 $	
1.00	EA	-	HYDRAULIC SHOVEL	116	74.00 $	8 584 $	
0.10	EA	-	SERVICE TRUCK	116	35.00 $	406 $	
0.10	EA	-	FUEL TRUCK	116	30.00 $	348 $	
0.50	EA	-	PICK-UP	116	10.00 $	580 $	
			unit price, sub-total		0.90 $	15 718 $	22.7%
		C)	Sub-contractor				
	EA			116		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
16 800	m^3	-	AVAILABLE TILL FROM CELL	(n/c)	- $	- $	
			(14000 BM3)				
3 000	m^3		TILL		2.00 $	6 000 $	
3 000	m^3		DELIVERY TO SITE		2.75 $	8 250 $	
2 200	t		CRUSHED STONE 0-19MM		5.25 $	11 550 $	
2 200	t		DELIVERY TO SITE		2.25 $	4 950 $	
			unit price, sub-total		1.77 $	30 750 $	44.4%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	3.98 $	69 268 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	0.60 $	10 390 $	
			TOTAL		4.58 $	79 658 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	1 596	m^3	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	21.3	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	CONSTRUCTION OF DYKES-CLAY COVER			Production	75.000	m3/ h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	21	50.00 $	532 $	
1.00	EA	-	EQUIP. OPERATOR	21	45.24 $	963 $	
1.00	EA	-	LABOR	21	36.49 $	777 $	
0.10	EA	-	MECHANIC	21	44.44 $	95 $	
0.10	EA	-	LABOR - FUEL	21	36.49 $	78 $	
			Number of hours, unit price, sub-total	57.456	1.53 $	2 443 $	17.8%
		B)	Equipment				
1.00	EA	-	HYDRAULIC SHOVEL	21	74.00 $	1 575 $	
0.10	EA	-	SERVICE TRUCK	21	35.00 $	74 $	
0.10	EA	-	FUEL TRUCK	21	30.00 $	64 $	
0.50	EA	-	PICK-UP	21	10.00 $	106 $	
			unit price, sub-total		1.14 $	1 819 $	13.2%
		C)	Sub-contractor				
	EA			21		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
2 000	m^3	-	CLAY		2.00 $	4 000 $	
2 000	m^3	-	DELIVERY TO SITE		2.75 $	5 500 $	
			unit price, sub-total		5.95 $	9 500 $	69.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	8.62 $	13 763 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	1.29 $	2 064 $	
			TOTAL		9.92 $	15 827 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	1 650	m³	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	16.5	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	CONSTRUCTION OF DYKES-SAND BOTTOM			Production	100.000	m³/ h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	17	50.00 $	413 $	
1.00	EA	-	EQUIP. OPERATOR	17	45.24 $	746 $	
1.00	EA	-	LABOR	17	36.49 $	602 $	
0.10	EA	-	MECHANIC	17	44.44 $	73 $	
0.10	EA	-	LABOR - FUEL	17	36.49 $	60 $	
			Number of hours, unit price, sub-total	44.55	1.15 $	1 895 $	9.1%
		B)	Equipment				
1.00	EA	-	BULL DOZER	17	40.00 $	660 $	
0.10	EA	-	SERVICE TRUCK	17	35.00 $	58 $	
0.10	EA	-	FUEL TRUCK	17	30.00 $	50 $	
0.50	EA	-	PICK-UP	17	10.00 $	83 $	
			unit price, sub-total		0.52 $	850 $	4.1%
		C)	Sub-contractor				
	EA			17		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
3 300	t	-	SAND		2.85 $	9 405 $	
3 300	t	-	DELIVERY TO SITE		2.65 $	8 745 $	
			unit price, sub-total		11.00 $	18 150 $	86.9%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	12.66 $	20 894 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	1.90 $	3 134 $	
			TOTAL		14.56 $	24 028 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	220	m	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	62.9	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	SLUDGE INTAKE PRIMARY PONDS			Production	3.500	m/ h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	63	50.00 $	1 571 $	
0.50	EA	-	EQUIP. OPERATOR	63	45.24 $	1 422 $	
2.00	EA	-	LABOR	63	36.49 $	4 587 $	
0.10	EA	-	MECHANIC	63	44.44 $	279 $	
0.10	EA	-	LABOR - FUEL	63	36.49 $	229 $	
			Number of hours, unit price, sub-total	201.1429	36.77 $	8 089 $	35.4%
		B)	Equipment				
0.50	EA	-	BACK-HOE	63	35.00 $	1 100 $	
0.10	EA	-	SERVICE TRUCK	63	35.00 $	220 $	
0.10	EA	-	FUEL TRUCK	63	30.00 $	189 $	
0.50	EA	-	PICK-UP	63	10.00 $	314 $	
			unit price, sub-total		8.29 $	1 823 $	8.0%
		C)	Sub-contractor				
	EA			63		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
220	m	-	PVC PIPE 200 MM DR-25 BRUTE BLEU		26.70 $	5 874 $	
12	EA	-	ELBOW 200 MM		140.00 $	1 680 $	
12	EA	-	TEES 200 X 200 X200 MM		200.00 $	2 400 $	
2	EA	-	VALVES		500.00 $	1 000 $	
1	LOT		VARIOUS MATERIAL		2 000.00 $	2 000 $	
			unit price, sub-total		58.88 $	12 954 $	56.7%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	103.94 $	22 866 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	15.59 $	3 430 $	
			TOTAL		119.53 $	26 296 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	2	LOT	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	40.0	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	OVERFLOW AND PUMPING WELL PRIM.PONDS			Production	0.050	LOT/ h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	40	50.00 $	1 000 $	
1.00	EA	-	EQUIP. OPERATOR	40	45.24 $	1 810 $	
0.50	EA	-	CRANE OPERATOR	40	45.43 $	909 $	
2.00	EA	-	LABOR	40	36.49 $	2 919 $	
2.00	EA	-	WELDER	40	43.43 $	3 474 $	
0.10	EA	-	MECHANIC	40	44.44 $	178 $	
0.10	EA	-	LABOR - FUEL	40	36.49 $	146 $	
			Number of hours, unit price, sub-total	248	5 217.76 $	10 436 $	22.9%
		B)	Equipment				
1.00	EA	-	BACK-HOE	40	35.00 $	1 400 $	
0.50	EA	-	SMALL CRANE	40	70.00 $	1 400 $	
1.00	EA	-	FLAT BED WITH CRANE	40	70.00 $	2 800 $	
1.00	EA	-	WELDING MACHINE	40	10.00 $	400 $	
0.10	EA	-	SERVICE TRUCK	40	35.00 $	140 $	
0.10	EA	-	FUEL TRUCK	40	30.00 $	120 $	
0.50	EA	-	PICK-UP	40	10.00 $	200 $	
			unit price, sub-total		3 230.00 $	6 460 $	14.1%
		C)	Sub-contractor				
	EA			40		- $	
			unit price, sub-total		-	- $	0.0%

		D)	Materials				
18	EA	-	CONCRETE BLOCKS 1 M3		200.00 $	3 600 $	
9 924	kg	-	H BEAM W 360 X 134 AND STEEL PLATES		1.32 $	13 100 $	
4	EA	-	MANHOLES		800.00 $	3 200 $	
4	EA	-	CAST IRON COVER		500.00 $	2 000 $	
100	m	-	PVC PIPE 200 MM DR 25 BRUTE BLEU		26.70 $	2 670 $	
10	EA		ELBOWS 200 MM		140.00 $	1 400 $	
4	EA		TEES 200 X 200 X 200 MM		200.00 $	800 $	
1	LOT		VARIOUS MATERIAL		2 000.00 $	2 000 $	
==========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		14 384.84 $	28 770 $	63.0%
==========	====	===	==========	==========	==========	==========	=======
			UNIT PRICE, TOTAL, PERCENTAGE	($)	22 832.60 $	45 665 $	100.0%
==========	====	===	==========	==========	==========	==========	=======
			ADMINISTRATIVE COSTS AND PROFI	15%	3 424.89 $	6 850 $	
==========	====	===	==========	==========	==========	==========	=======
			TOTAL		26 257 $	52 515 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	220	m	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	62.9	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	SLUDGE INTAKE (SECONDARY PONDS)			Production	3.500	m/ h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	63	50.00 $	1 571 $	
0.50	EA	-	EQUIP. OPERATOR	63	45.24 $	1 422 $	
2.00	EA	-	LABOR	63	36.49 $	4 587 $	
0.10	EA	-	MECHANIC	63	44.44 $	279 $	
0.10	EA	-	LABOR - FUEL	63	36.49 $	229 $	
			Number of hours, unit price, sub-total	201.1429	36.77 $	8 089 $	35.4%
		B)	Equipment				
0.50	EA	-	BACK-HOE	63	35.00 $	1 100 $	
0.10	EA	-	SERVICE TRUCK	63	35.00 $	220 $	
0.10	EA	-	FUEL TRUCK	63	30.00 $	189 $	
0.50	EA	-	PICK-UP	63	10.00 $	314 $	
			unit price, sub-total		8.29 $	1 823 $	8.0%
		C)	Sub-contractor				
	EA			63		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
220	m	-	PVC PIPE 200 MMM DR-25 BRUTE BLEU		26.70 $	5 874 $	
12	EA	-	ELBOW 200 MM		140.00 $	1 680 $	
12	EA	-	TEES 200 X 200 X200 MM		200.00 $	2 400 $	
2	EA	-	VALVES		500.00 $	1 000 $	
1	LOT		VARIOUS MATERIAL		2 000.00 $	2 000 $	
			unit price, sub-total		58.88 $	12 954 $	56.7%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	103.94 $	22 866 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	15.59 $	3 430 $	
			TOTAL		119.53 $	26 296 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	2	LOT	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	40.0	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	OVERFLOW AND PUMPING WELL SEC.PONDS			Production	0.050	LOT/ h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	40	50.00 $	1 000 $	
1.00	EA	-	EQUIP. OPERATOR	40	45.24 $	1 810 $	
0.50	EA	-	CRANE OPERATOR	40	45.43 $	909 $	
2.00	EA	-	LABOR	40	36.49 $	2 919 $	
2.00	EA	-	WELDER	40	43.43 $	3 474 $	
0.10	EA	-	MECHANIC	40	44.44 $	178 $	
0.10	EA	-	LABOR - FUEL	40	36.49 $	146 $	
			Number of hours, unit price, sub-total	248	5 217.76 $	10 436 $	22.9%
		B)	Equipment				
1.00	EA	-	BACK-HOE	40	35.00 $	1 400 $	
0.50	EA	-	SMALL CRANE	40	70.00 $	1 400 $	
1.00	EA	-	FLAT BED WITH CRANE	40	70.00 $	2 800 $	
1.00	EA	-	WELDING MACHINE	40	10.00 $	400 $	
0.10	EA	-	SERVICE TRUCK	40	35.00 $	140 $	
0.10	EA	-	FUEL TRUCK	40	30.00 $	120 $	
0.50	EA	-	PICK-UP	40	10.00 $	200 $	
			unit price, sub-total		3 230.00 $	6 460 $	14.1%
		C)	Sub-contractor				
	EA			40		- $	
			unit price, sub-total		-	- $	0.0%

		D)	Materials				
18	EA	-	CONCRETE BLOCKS 1 M3		200.00 $	3 600 $	
9 924	kg	-	H BEAM W 360 X 134 AND STEEL PLATES		1.32 $	13 100 $	
4	EA	-	MANHOLES		800.00 $	3 200 $	
4	EA	-	CAST IRON COVER		500.00 $	2 000 $	
100	m	-	PVC PIPE 200 MM DR 25 BRUTE BLEU		26.70 $	2 670 $	
10	EA		ELBOWS 200 MM		140.00 $	1 400 $	
4	EA		TEES 200 X 200 X 200 MM		200.00 $	800 $	
1	LOT		VARIOUS MATERIALS		2 000.00 $	2 000 $	
==========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		14 384.84 $	28 770 $	63.0%
==========	====	===	==========	==========	==========	==========	=======
			UNIT PRICE, TOTAL, PERCENTAGE	($)	22 832.60 $	45 665 $	100.0%
==========	====	===	==========	==========	==========	==========	=======
			ADMINISTRATIVE COSTS AND PROFI	15%	3 424.89 $	6 850 $	
==========	====	===	==========	==========	==========	==========	=======
			TOTAL		26 257 $	52 515 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	19	mth	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	3 800.0	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	SEDIMENT REMOVAL FROM PONDS TO CELL			Production	0.005	MOIS/ h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.25	EA	-	FOREMAN	3 800	50.00 $	47 500 $	
1.00	EA	-	EQUIP. OPERATOR	3 800	45.24 $	171 912 $	
2.00	EA	-	LABOR	3 800	36.49 $	277 324 $	
0.10	EA	-	MECHANIC	3 800	44.44 $	16 887 $	
0.10	EA	-	LABOR - FUEL	3 800	36.49 $	13 866 $	
			Number of hours, unit price, sub-total	13110	27 762.60 $	527 489 $	49.6%
		B)	Equipment				
1.00	EA	-	DRAG LINE	3 800	110.00 $	418 000 $	
0.10	EA	-	SERVICE TRUCK	3 800	35.00 $	13 300 $	
4.00	EA	-	PUMPS	3 800	5.00 $	76 000 $	
1.00	EA	-	PUMPS (STAND BY)	3 800	2.00 $	7 600 $	
0.10	EA	-	FUEL TRUCK	3 800	30.00 $	11 400 $	
0.25	EA	-	PICK-UP	3 800	10.00 $	9 500 $	
			unit price, sub-total		28 200.00 $	535 800 $	50.4%
		C)	Sub-contractor				
	EA			3 800		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
						- $	
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	55 962.60 $	1 063 289 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	8 394.39 $	159 493 $	
			TOTAL		64 357 $	1 222 783 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	1	lot	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	50.0	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	PONDS REMOVAL -EQUIPMENT			Production	0.020	LOT/ h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.25	EA	-	FOREMAN	50	50.00 $	625 $	
1.00	EA	-	EQUIP. OPERATOR	50	45.24 $	2 262 $	
1.00	EA	-	DRIVER	50	38.49 $	1 925 $	
2.00	EA	-	LABOR	50	36.49 $	3 649 $	
0.10	EA	-	MECHANIC	50	44.44 $	222 $	
0.10	EA	-	LABOR - FUEL	50	36.49 $	182 $	
			Number of hours, unit price, sub-total	222.5	8 865.15 $	8 865 $	54.3%
		B)	Equipment				
1.00	EA	-	SMALL CRANE	50	70.00 $	3 500 $	
1.00	EA	-	FLAT BED WITH CRANE	50	70.00 $	3 500 $	
0.10	EA	-	SERVICE TRUCK	50	35.00 $	175 $	
0.10	EA	-	FUEL TRUCK	50	30.00 $	150 $	
0.25	EA	-	PICK-UP	50	10.00 $	125 $	
			unit price, sub-total		7 450.00 $	7 450 $	45.7%
		C)	Sub-contractor				
				50		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
						- $	
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	16 315.15 $	16 315 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	2 447.27 $	2 447 $	
			TOTAL		18 762 $	18 762 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	1	lot	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	0.0	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	PONDS REMOVAL - SEE CELL COVERING			Production	#DIV/0!	lot/ h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.25	EA	-	FOREMAN	-	50.00 $	- $	
1.00	EA	-	EQUIP. OPERATOR	-	45.24 $	- $	
1.00	EA	-	DRIVER	-	38.49 $	- $	
2.00	EA	-	LABOR	-	36.49 $	- $	
0.10	EA	-	MECHANIC	-	44.44 $	- $	
0.10	EA	-	LABOR - FUEL	-	36.49 $	- $	
			Number of hours, unit price, sub-total	0	- $	- $	#DIV/0!
		B)	Equipment				
1.00	EA	-	SMALL CRANE	-	70.00 $	- $	
1.00	EA	-	FLAT BED WITH CRANE	-	70.00 $	- $	
0.10	EA	-	SERVICE TRUCK	-	35.00 $	- $	
0.10	EA	-	FUEL TRUCK	-	30.00 $	- $	
0.25	EA	-	PICK-UP	-	10.00 $	- $	
			unit price, sub-total		- $	- $	#DIV/0!
		C)	Sub-contractor				
				-		- $	
			unit price, sub-total		-	- $	#DIV/0!
		D)	Materials				
						- $	
			unit price, sub-total		- $	- $	#DIV/0!
			UNIT PRICE, TOTAL, PERCENTAGE	($)	- $	- $	#DIV/0!
			ADMINISTRATIVE COSTS AND PROFI	15%	- $	- $	
			TOTAL		- $	- $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	17 500	m^2	
Work Pkg.:	WATER TREATMENT PROCESS			Duration	100.0	hours	
Sub-Pkg. :	SETTLING PONDS						
Activity :	PONDS REMOVAL - SITE RESTORATION			Production	175.000	m^2 / h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.25	EA	-	FOREMAN	100	50.00 $	1 250 $	
2.00	EA	-	EQUIP. OPERATOR	100	45.24 $	9 048 $	
2.00	EA	-	LABOR	100	36.49 $	7 298 $	
0.10	EA	-	MECHANIC	100	44.44 $	444 $	
0.10	EA	-	LABOR - FUEL	100	36.49 $	365 $	
			Number of hours, unit price, sub-total	445	1.05 $	18 405 $	28.2%
		B)	Equipment				
1.00	EA	-	BULL DOZER	100	50.00 $	5 000 $	
1.00	EA	-	GRADER	100	70.00 $	7 000 $	
0.10	EA	-	SERVICE TRUCK	100	35.00 $	350 $	
0.10	EA	-	FUEL TRUCK	100	30.00 $	300 $	
0.50	EA	-	PICK-UP	100	10.00 $	500 $	
			unit price, sub-total		0.75 $	13 150 $	20.2%
		C)	Sub-contractor				
17 500	m^2		HYDRO-SEEDING	1	1.00 $	17 500 $	
			unit price, sub-total		1	17 500 $	26.8%
		D)	Materials				
1 750	m^3		TOPSOIL		6.60 $	11 550 $	
1 750	m^3		TOPSOIL DELIVERY TO SITE		2.65 $	4 638 $	
			unit price, sub-total		0.93 $	16 188 $	24.8%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	3.73 $	65 243 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	0.56 $	9 786 $	
			TOTAL		4 $	75 029 $	

Structur	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	1	LOT	
Work Pk	DREDGING			Duration		hours	
Sub-Pkg. :							
Activity :	ALLOW. FOR A WATER TREATMENT UNIT			Production			
========	====	===	==========	==========	==========	==========	=======
					($)		
Quantity	Unit		Description	Man-hours	unit		
					price	cost	%
========	====	===	==========	==========	==========	==========	=======
		A)	Labour				
	EA.	-		-		- $	
	EA.	-		-		- $	
	EA.	-		-		- $	
========	====	===	==========	==========	==========	==========	=======
			Number of hours, unit price, sub-total	0	- $	- $	0.0%
========	====	===	==========	==========	==========	==========	=======
		B)	Equipment				
	EA.	-		-		- $	
	EA.	-		-		- $	
	EA.	-		-		- $	
========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		- $	- $	0.0%
========	====	===	==========	==========	==========	==========	=======
		C)	Sub-contractor				
		-	ALLOWANCE FOR THE SUPPLY,				
1.00	LOT	-	INSTALL AND REMOVAL OF A WATER	1	800 000 $	800 000 $	
		-	TREATMENT UNIT				
		-		-		- $	
========	====	==========		==========	==========	==========	=======
			unit price, sub-total		800 000	800 000 $	80.0%
========	====	===	==========	==========	==========	==========	=======
		D)	Materials				
1.00	LOT	-	ALLOWANCE FOR SUPPLY OF	1	200 000	200 000 $	
			CHEMICAL PRODUCTS				
========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		200 000 $	200 000 $	20.0%
========	====	===	==========	==========	==========	==========	=======
			UNIT PRICE, TOTAL, PERCENTAGE	($)	1 000 000 $	1 000 000 $	100.0%
========	====	===	==========	==========	==========	==========	=======
			ADMINISTRATIVE COSTS AND PROFI	15%	150 000 $	150 000 $	
========	====	===	==========	==========	==========	==========	=======
			TOTAL		1 150 000 $	1 150 000 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	72 000	m^3	
Work Pkg..:	DREDGING			Duration		hours	
Sub-Pkg.. :							
Activity :	ALLOW. FOR OPER. OF WATER TREAT.UNIT			Production			
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.00	EA.	-	FOREMAN	-	50.00 $	- $	
1.25	EA.	-	EQUIP. OPERATOR	-	45.24 $	- $	
0.20	EA.	-	LABOR	-	36.49 $	- $	
0.20	EA.	-	MECHANIC	-	44.44 $	- $	
0.00	EA.	-	LABOR - FUEL	-	36.49 $	- $	
			Number of hours, unit price, sub-total	0	- $	- $	0.0%
		B)	Equipment				
0.25	EA.	-	BACK-HOE	-	23.00 $	- $	
1.00	EA.	-	PICK UP	-	10.00 $	- $	
			unit price, sub-total		- $	- $	0.0%
		C)	Sub-contractor				
72 000.00	m^3	-	operation of water treatment unit	1	30.00 $	2 160 000 $	
			unit price, sub-total		30	2 160 000 $	100.0%
		D)	Materials				
		-				- $	
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	30.00 $	2 160 000 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	4.50 $	324 000 $	
			TOTAL		35 $	2 484 000 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	5250	m^3	
Work Pkg.:	ON-ISLAND WORK			Duration	70.0	hours	
Sub-Pkg. :	PYRITE CINDERS ON SHORE LINE						
Activity :	EXCAV. & DISPOSAL OF CONTAMINATED MA			Production	75.000	m^3/h	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	70	50.00 $	1 750 $	
1.00	EA	-	EQUIP. OPERATOR	70	45.24 $	3 167 $	
1.00	EA	-	LABOR	70	36.49 $	2 554 $	
0.10	EA	-	MECHANIC	70	44.44 $	311 $	
0.10	EA	-	LABOR - FUEL	70	36.49 $	255 $	
			Number of hours, unit price, sub-total	189	1.53 $	8 038 $	36.8%
		B)	Equipment				
1.00	EA	-	BULLDOZER D-4	70	40.00 $	2 800 $	
0.10	EA	-	FUEL TRUCK	70	30.00 $	210 $	
0.10	EA	-	MECHANIC TRUCK	70	35.00 $	245 $	
0.50	EA	-	PICK UP	70	10.00 $	350 $	
			unit price, sub-total		0.69 $	3 605 $	16.5%
		C)	Sub-contractor				
			5250 M^3 (Bank measure) *125%= 6560M^3				
3.00	EA	-	DUMP TRUCK 3 AXLES	70	48.50 $	10 185 $	
			unit price, sub-total		2	10 185 $	46.7%
		D)	Materials				
		-				- $	
			unit price, sub-total		- $	- $	0.0%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	4.16 $	21 828 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	0.62 $	3 274 $	
			TOTAL		4.78 $	25 102 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	5250	m^3	
Work Pkg.:	ON-ISLAND WORK			Duration	70.0	hours	
Sub-Pkg. :	ANCHORING OF MEMBRANE						
Activity :	BACKFILL OF EXCAVATION			Production	75.000	m^3/h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	70	50.00 $	1 750 $	
1.00	EA	-	EQUIP. OPERATOR	70	45.24 $	3 167 $	
2.00	EA	-	LABOR	70	36.49 $	5 109 $	
0.10	EA	-	LUB. LABOR	70	44.44 $	311 $	
0.10	EA	-	LABOR - FUEL	70	36.49 $	255 $	
			Number of hours, unit price, sub-total	259	2.02 $	10 592 $	23.7%
		B)	Equipment				
1.00	EA	-	BACK-HOE	70	40.00 $	2 800 $	
0.10	EA	-	FUEL TRUCK	70	30.00 $	210 $	
0.10	EA	-	LUB TRUCK	70	35.00 $	245 $	
1.00	EA	-	COMPACTION PLATE	70	7.00 $	490 $	
0.50	EA	-	PICK UP	70	10.00 $	350 $	
			unit price, sub-total		0.78 $	4 095 $	9.2%
		C)	Sub-contractor				
		-		70		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
6 300	m^3	-	TILL		4.75 $	29 925 $	
			unit price, sub-total		5.70 $	29 925 $	67.1%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	8.50 $	44 612 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	1.27 $	6 692 $	
			TOTAL		9.77 $	51 304 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	6	times	
Work Pkg.:	DREDGING			Duration	180.0	hours	
Sub-Pkg. :							
Activity :	MOBIL. OR DEMOB. OF DREDGING EQUIP.			Production	0.033	times/ h	
					($)		
Quantity	Unit		Description	Man-hours	unit price	cost	%
		A)	Labour				
1.00	EA	-	FOREMAN	180	50.00 $	9 000 $	
4.00	EA	-	EQUIP. OPERATOR	180	45.24 $	32 573 $	
4.00	EA	-	TRUCK DRIVERS	180	38.49 $	27 713 $	
4.00	EA	-	LABORS	180	36.49 $	26 273 $	
1.00	EA	-	MECHANIC	180	44.44 $	7 999 $	
0.50	EA	-	LABOR - FUEL	180	36.49 $	3 284 $	
			Number of hours, unit price, sub-total	2610	17 806.95 $	106 842 $	47.2%
		B)	Equipment				
5.00	EA	-	TRUCK AND TRAILERS	180	75.00 $	67 500 $	
1.00	EA	-	SMALL CRANE	180	70.00 $	12 600 $	
1.00	LOT	-	SMALL TOOLS	180	30.00 $	5 400 $	
4.00	EA	-	DREDGING EQUIPMENT	120	50.00 $	24 000 $	
			unit price, sub-total		18 250.00 $	109 500 $	48.4%
		C)	Sub-contractor				
		-		180		- $	
			unit price, sub-total		-	- $	0.0%
		D)	Materials				
1	LOT	-	CONSUMMABLE MATERIALS		10 000.00 $	10 000 $	
			unit price, sub-total		1 667 $	10 000 $	4.4%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	37 723.62 $	226 342 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	5 658.54 $	33 951 $	
			TOTAL		43 382 $	260 293 $	

Structure	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	480 000	m^3	
Work Pkg.:	DREDGING			Duration	3 200.0	hours	
Sub-Pkg. :							
Activity :	DREDGING OF SEDIMENTS (MUD)						
=========	====	===	==========	==========	==========	==========	=======
					($)		
Quantity	Unit		Description	Man-hours	unit		
					price	cost	%
=========	====	===	==========	==========	==========	==========	=======
		A)	Labour				
1.00	EA	-	FOREMAN	3 200	50.00 $	160 000 $	
2.00	EA	-	EQUIP. OPERATOR	3 200	45.24 $	289 536 $	
4.00	EA	-	LABOR	3 200	36.24 $	463 872 $	
=========	====	===	==========	==========	==========	==========	=======
			Number of hours, unit price, sub-total	22400	1.90 $	913 408 $	28.5%
=========	====	===	==========	==========	==========	==========	=======
		B)	Equipment				
3.00	EA	-	OPERATING DREDGE	3 200	230.00 $	2 208 000 $	
1.00	EA	-	SERVICE BOAT	3 200	8.00 $	25 600 $	
3.00	LOT	-	PIPING	3 200	6.00 $	57 600 $	
=========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		4.77 $	2 291 200 $	71.5%
=========	====	===	==========	==========	==========	==========	=======
		C)	Sub-contractor				
		-		3 200		- $	
=========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		-	- $	0.0%
=========	====	===	==========	==========	==========	==========	=======
		D)	Materials				
		-				- $	
=========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		- $	- $	0.0%
=========	====	===	==========	==========	==========	==========	=======
			UNIT PRICE, TOTAL, PERCENTAGE	($)	6.68 $	3 204 608 $	100.0%
=========	====	===	==========	==========	==========	==========	=======
			ADMINISTRATIVE COSTS AND PROFIT	15%	1.00 $	480 691 $	
=========	====	===	==========	==========	==========	==========	=======
			TOTAL		**7.68 $**	**3 685 299 $**	

Structure	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	3	mth (60%)	
Work Pkg.:	DREDGING			Duration	320.0	hours	
Sub-Pkg. :							
Activity :	DREDGING OF SEDIMENTS - FINAL CORRECTIONS						
=========	====	===	==========	==========	==========	==========	=======
					($)		
Quantity	Unit		Description	Man-hours	unit		
					price	cost	%
=========	====	===	==========	==========	==========	==========	=======
		A)	Labour				
0.00	EA	-	FOREMAN	320	50.00 $	- $	
1.00	EA	-	EQUIP. OPERATOR	320	45.24 $	14 477 $	
1.00	EA	-	LABOR	320	36.24 $	11 597 $	
=========	====	===	==========	==========	==========	==========	=======
			Number of hours, unit price, sub-total	640	8 686.86 $	26 074 $	25.0%
=========	====	===	==========	==========	==========	==========	=======
		B)	Equipment				
1.00	EA	-	OPERATING DREDGE	320	230.00 $	73 600 $	
1.00	EA	-	SERVICE BOAT	320	8.00 $	2 560 $	
1.00	LOT	-	PIPING	320	6.00 $	1 920 $	
=========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		26 013.66 $	78 080 $	75.0%
=========	====	===	==========	==========	==========	==========	=======
		C)	Sub-contractor				
		-		320		- $	
=========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		-	- $	0.0%
=========	====	===	==========	==========	==========	==========	=======
		D)	Materials				
		-				- $	
=========	====	===	==========	==========	==========	==========	=======
			unit price, sub-total		- $	- $	0.0%
=========	====	===	==========	==========	==========	==========	=======
			UNIT PRICE, TOTAL, PERCENTAGE	($)	34 700.52 $	104 154 $	100.0%
=========	====	===	==========	==========	==========	==========	=======
			ADMINISTRATIVE COSTS AND PROFIT	15%	5 205.08 $	15 623 $	
=========	====	===	==========	==========	==========	==========	=======
			TOTAL		39 905.59 $	119 777 $	

Structure :	SEDIM. DREDGING & ON-ISLAND DISPOSAL			Quantity	7	set up	
Work Pkg.:	DREDGING			Duration	280.0	hours	
Sub-Pkg. :	TURBIDITY BARRIERS						
Activity :	INSTALLATION OF TURBIDITY BARRIERS			Production	0.025	INST & REMOV / HR	
Quantity	Unit		Description	Man-hours	($) unit price	cost	%
		A)	Labour				
0.50	EA	-	FOREMAN	280	50.00 $	7 000 $	
1.00	EA	-	EQUIP. OPERATOR	280	45.24 $	12 667 $	
1.00	EA	-	CRANE OPERATOR	280	45.43 $	12 720 $	
4.00	EA	-	LABOR	280	36.49 $	40 869 $	
0.25	EA	-	MECHANIC	280	44.44 $	3 111 $	
0.25	EA	-	LABOR - FUEL	280	36.49 $	2 554 $	
			Number of hours, unit price, sub-total	1960	11 274.50 $	78 922 $	30.2%
		B)	Matériel				
1.00	EA	-	BARGE	280	40.00 $	11 200 $	
1.00	EA	-	TUG BOAT	280	30.00 $	8 400 $	
1.00	EA	-	SMALL CRANE	280	70.00 $	19 600 $	
1.00	EA		WATER PUMP	280	10.00 $	2 800 $	
1.00	EA		COMPRESSOR	280	20.00 $	5 600 $	
1.00	EA	-	PICK UP	280	10.00 $	2 800 $	
			unit price, sub-total		7 200.00 $	50 400 $	19.3%
		C)	Sub-contractor				
1.00		-	TEAM OF 2 DIVERS	280	200.00 $	56 000 $	
			WITH EQUIPMENT				
			unit price, sub-total		8 000	56 000 $	21.4%
		D)	Materials				
1 682	m^2	-	GEO-9		2.30 $	3 869 $	
1 682	m^2	-	GEOTEXTILE GEO-9 (SECOND LAYER)		2.30 $	3 869 $	
1 160			SEAMS		2.40 $	2 784 $	
580.00	m		WEIGHT CHAIN		70.00 $	40 600 $	
150.00	EA		FLOATING DEVICE		150.00 $	22 500 $	
580.00	m		POLYPROLENE ROPE 7/8"		4.50 $	2 610 $	
			unit price, sub-total		10 890 $	76 231 $	29.1%
			UNIT PRICE, TOTAL, PERCENTAGE	($)	37 364.67 $	261 553 $	100.0%
			ADMINISTRATIVE COSTS AND PROFI	15%	5 604.70 $	39 233 $	

			TOTAL		42 969 $	300 786 $	

Appendix E

Other Sediments Remediation Projects Costs

Other Dredging Projects

Site	Sediment Volume (m^3)	Sediment Remediation ($US)	Cost ($Can)	Sediment Remediation Unit Costs	
				$US/$m^3$	$Can/ m^3
Waukegan Harbor	24 320	21 000 000	30 870 000	863	1 269
Manistique	91 200	15 809 228	23 239 565	173	225
River Raisin	20 520	6 000 000	8 820 000	292	430
Lower Rouge River	26 220	1 000 000	1 470 000	38	56
Upper Rouge River	5 320	550 000	808 500	103	152
Newburgh Lake	304 000	11 800 000	17 346 000	39	57
Monguagon Creek	19 097	3 000 000	4 410 000	157	231
Unnamed Tributary to Wolf Creek	9 800	1 000 000	1 470 000	102	150
Black and Bergholtz Creeks	13 072	14 000 000	20 580 000	1 071	1 574
Gill Creek – DuPont	6 095	10 000 000	14 700 000	1 641	2 412
Gill Creek – Olin	5 700	1 400 000	2 058 000	246	361
Niagara Mohawk – Cherry Farm	36 480	4 000 000	5 880 000	110	161

Other Dredging Projects

Site	Sediment Volume (m^3)	Sediment Remediation ($US)	Cost ($Can)	Sediment Remediation Unit Costs	
				$US/$m^3$	$Can/ m^3
Creekside Golf Course	988	4 500 000	6 615 000	4 555	6 695
St. Lawrence River – ALCOA	2 660	4 800 000	7 056 000	1 805	2 653
Black River	38 000	1 500 000	2 205 000	39	58
Ottawa River Tributary	7 600	5-6 000 000	7 350 000-8 820 000	724	1 064
Menominee River	7 600	1 500 000	2 205 000	197	290
Newton Creek/Hog Island Inlet	1 824	250 000	367 500	137	201
North Avenue Dam of the Milwaukee River	570 000	2 600 000	3 822 000	5	7
Ruck Pond	5 852	7 080 000	10 407 600	1 210	1 778
Total and Average Unit Cost	**1 227 356**	**124 289 228**	**182 705 165**	**101**	**149**

Clark Island Sediment dredging alternative (25% solids)	120 000	9 842 449	14 468 400	82	121
Clark Island Sediment dredging alternative (15% solids)	120 000	12 862 653	18 908 100	107	158